DECEMBER 1956

products finishing

FINISHES ON METAL PRODUCTS

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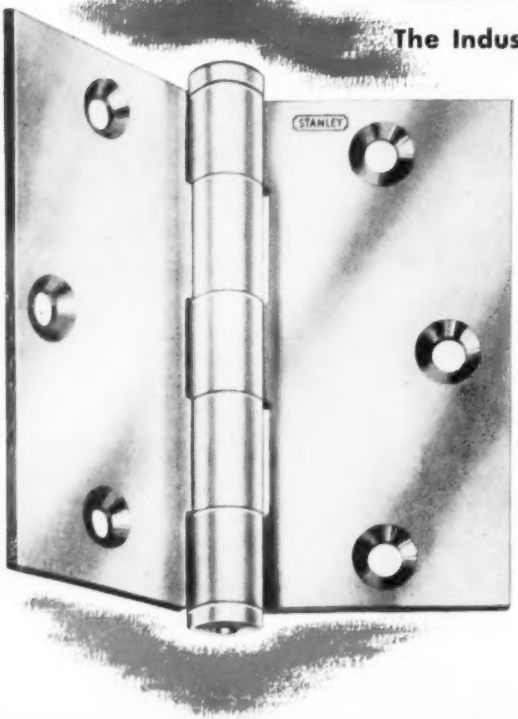
STANLEY **NO. 241 HINGES**
"Standard of the World"

finished with LEA LIQUABRADE



The Industry Standard for liquid buffing and polishing compositions

Occasionally a product becomes th "standard" of its type because of unvar ing excellence in manufacture and us Such a product is the Stanley No. 24 Hinge. Almost since it was first introduce in 1879, this has been the *Standard of th World* for plain bearing hinges.

For the finishing of the No. 241 Hinge, and many of its other products, The Stanley Works uses LEA LIQUABRADE . . . the Fin ishing Industry Standard for a stable, non settling, non-flammable liquid buffing and polishing composition.

For *flexible, high production rate, low cos* finishing line operations you can't beat the Lea Spray Buffing Package Plan — Lea Liquabrade and Lea Engineered Spray Buf fing Equipment. Write today for complete information.

Burring, Buffing, Polishing, Lapping, Plating and Spray Finishing . . . Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions. Manufacturers of Lea Compound or Learok . . . Industry's quality buffing and polishing compounds for over 30 years.

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16 CHERRY AVE., WATERBURY 20, CONN.

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Lea Mfg. Company of Canada, Ltd., 1236 Birchmount Road, Scarborough, Ontario, Canada
Lea Mfg. Company of England, Ltd., Buxton, England
Lea-Ronal, Inc., Main Office and Laboratory: 139-20 109th Ave., Jamaica 35, N. Y.
Manufacturing Plant: 237 East Aurora St., Waterbury 20, Conn.

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4	18	32	46	60	74	88	102	116	130	144	158	171	184	197	210	223	236	249	262
5	19	33	47	61	75	89	103	117	131	145	159	172	185	198	211	224	237	250	263
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10	24	38	52	66	80	94	108	122	136	150	164	177	190	203	216	229	242	255	268
11	25	39	53	67	81	95	109	123	137	151	165	178	191	204	217	230	243	256	269
12	26	40	54	68	82	96	110	124	138	152	166	179	192	205	218	231	244	257	270
13	27	41	55	69	83	97	111	125	139	153	167	180	193	206	219	232	245	258	271
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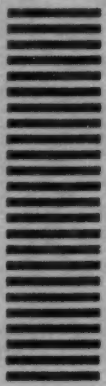

Your Monthly Source For Finishing Ideas

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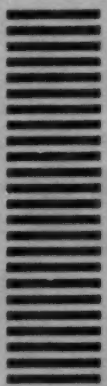

Do you need better ways to strip paint?

When tough finishes resist your present stripping methods, you may need help on some of these problems:

1. How to strip oil-base paints... synthetic enamels ... alkali-resistant plastics ... resin-base paints ... japans ... wrinkle finishes ... nitrocellulose lacquers ... alkyds ... phenolics ... ureas.
2. How to strip zinc chromate primers without etching aluminum.
3. How to strip paint from vertical surfaces and undersurfaces where thin-bodied strippers run off without doing their work.
4. How to strip metal parts that are too large to be soaked in tanks.
5. How to strip paint, pigment residues, phosphate coatings and rust in one operation.
6. How to strip paint from rejects, conveyor chains, racks and hooks in continuous operation.

Oakite has more than a dozen fine stripping materials for these and similar jobs.

FREE For information on problems 1, 2, 3 and 4 ask for a copy of "How to strip paint". For more on problems 5 and 6 ask for "Here's the best shortcut in the field of organic finishing". Write to Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

Export Division Cable Address: Oakite

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Besides this 3/16" diameter size of Tumblex "S" you can order it in four other sizes, up to 7/8". This means top barrel-finishing performance for you, in many different applications. And these new spheres are exceptionally dense and long-lasting.

Norton ALUNDUM* Tumblex "S" Spheres

Another big advance in barrel-finishing

Tubing, coil springs, scissor handles, bearing retainers, pump bodies and many other parts have recesses or intricate shapes that are hard to contact in finishing. You can finish them faster and better with ALUNDUM Tumblex "S" abrasive because:

Tumblex "S" is made in spheres that easily get into areas where other abrasive shapes can't reach . . . It comes in five different diameter sizes: #2, 7/8"; #3, 5/8"; #4, 3/8"; #5, 9/32" and #6, 3/16", covering a big range of parts to be barrel-finished . . . Made of famous Norton ALUNDUM abrasive, it cuts fast — resulting in shorter time cycles and lower costs per piece finished.

Send your work samples to our Sample Processing Department. Learn how Tumblex "S" abrasive can bring the value-adding, cost-cutting "Touch of Gold" to your barrel-finishing operations. NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

G-319

NORTON
ABRASIVES

Making better products... to make your products better

NORTON PRODUCTS:
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BEHR-MANNING PRODUCTS: Coated Abrasives
Sharpening Stones • Behr-cat Tapes

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Curtain Going Up!

The Marion Davies Building, New York, was completely enclosed in *10 hours*—through the miracle of anodized aluminum "curtain" walls. Giant two-story panels are manufactured by General Bronze Corp., using an **H-VW-M AUTOMATIC ANODIZING SYSTEM.**

General Bronze Corp. led the field when they anticipated the vastly increased use of anodized aluminum in the building industry. The same wisdom and foresight motivated General Bronze when they called on H-VW-M to supply their giant, streamlined new anodizing system. **H-VW-M DESIGNED, MANUFACTURED AND INSTALLED** it from beginning to end. And the benefits to General Bronze: tripled production . . . improved quality control . . . and the assurance that H-VW-M—the **ONE SOURCE** they chose—assumed **COMPLETE RESPONSIBILITY** for the entire system, from concept to production.

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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How Big is a Bubble?

Always big enough to get the parts clean. Never big enough to choke the flow in your washing machine

with

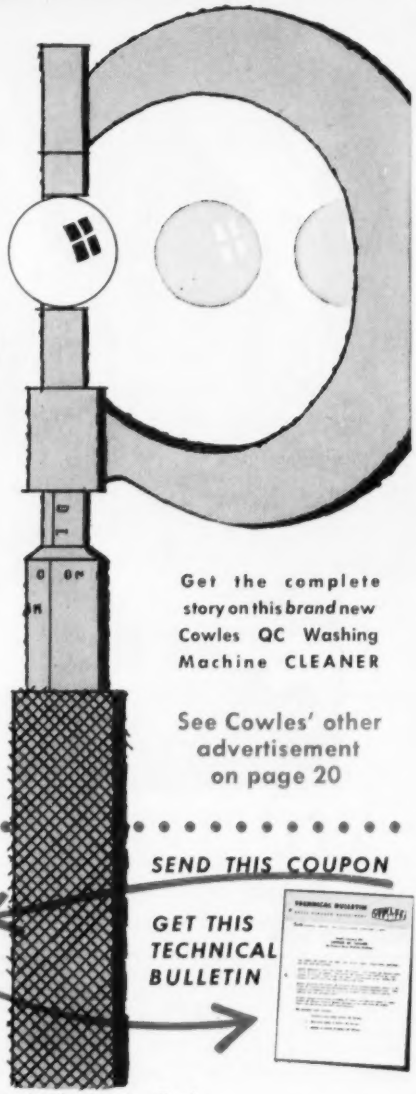
Cowles NEW QC WASHING MACHINE CLEANER

It's alkaline—but *more* than an alkali. NOW—for the first time—you can use

REINFORCED CLEANING

added wetting, penetrating, soil-loosening, emulsifying power in your washing machine

without excessive foaming



Get the complete story on this *brand* new Cowles QC Washing Machine CLEANER

See Cowles' other advertisement on page 20

Cowles Chemical Company
7016 Euclid Ave. • Cleveland 3, Ohio

Send Technical Bulletin on Cowles QC Washing Machine Cleaner

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Company_____

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products finishing

Vol. 21 No. 3 December, 1956

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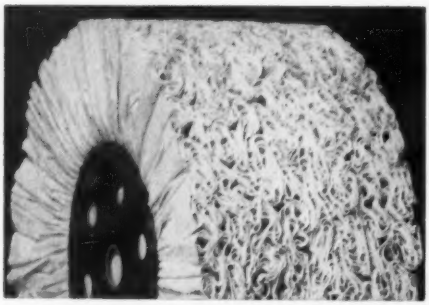
BETTER FINISH
AND
HIGHER COLOR
with new Churchill
Finger - Buff* #300H15



This new Churchill Finger-Buff* #300H15 is a new type of Finger-Buff* . . . unique in that the face of the buff is deliberately made *non uniform*. This eliminates all tendency to streak or gouge the work.

Manufacturers report that results with this new #300H15 are better finish with higher color on stainless, copper, and zinc die castings.

The Churchill Finger-Buff* #300H15 is made only with the best grade, heaviest weight, all new 86/93 bias-cut cotton cloth.

- Churchill Finger-Buffs* are competitively priced. Produced in all sizes from 6" to 18" diameters. For complete information write, your problem.

*Churchill Finger-Buff, T.M. Reg. U. S. Pat. Off.

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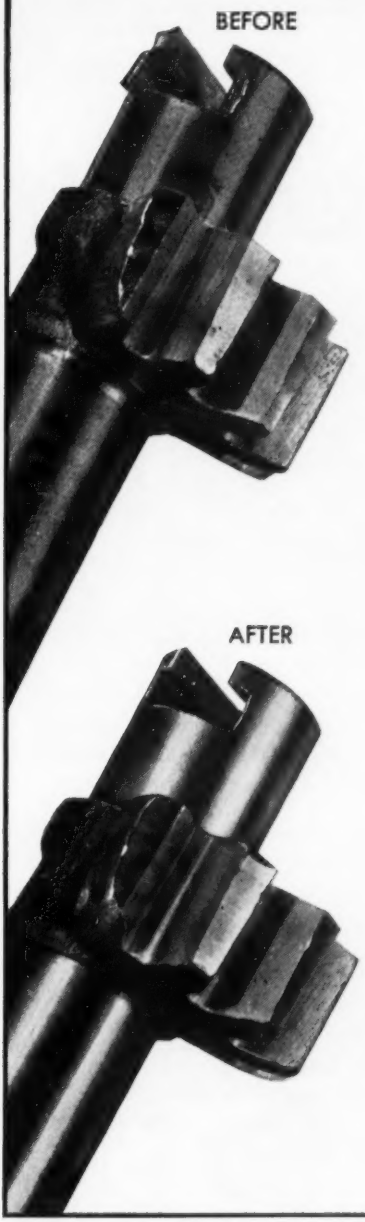

do tricky
DEBURRING
automatically

Operation — to remove burr in the "T" slot, left by a broaching operation.

Production — 600 parts required per hour.

Solution — Hammond Indexing Rotary Automatic with four Heads. No. 1 Head has milling cutter to remove excess stock. No. 2 Head has abrasive belt to "smooth-up". No. 3 and 4 Heads have wire brushes for final brushing.

Need help on your deburring problems? Send sample parts for a complete engineering analysis.

Hammond Machinery Builders INC.

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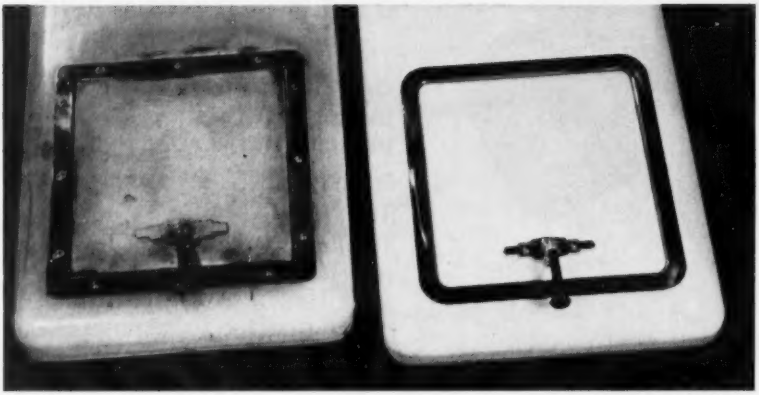
For superior color and gloss retention at high temperatures . . .

use Silicone Based Paints



▲ White organic enamel finish — Silicone based finish ▲

Here's the kind of superior color and gloss retention you can expect with paints based on Dow Corning silicone resins. After a few weeks exposure to temperatures up to 500 F, the finish on the incinerator cover at left is ruined, whereas the silicone based finish on the cover at right looks like new.

Finishes based on Dow Corning silicones provide superior resistance to corrosion and weather.

Your products still look *good as new after years of service* when you specify Dow Corning silicones in the finishes you use.

Write today for a FREE personal copy of this new, fact-filled brochure which contains a list of paint manufacturers who sell silicone based paints.

Dept. 5012

DOW CORNING CORPORATION
Midland, Michigan

DOW CORNING SILICONES

first in silicones

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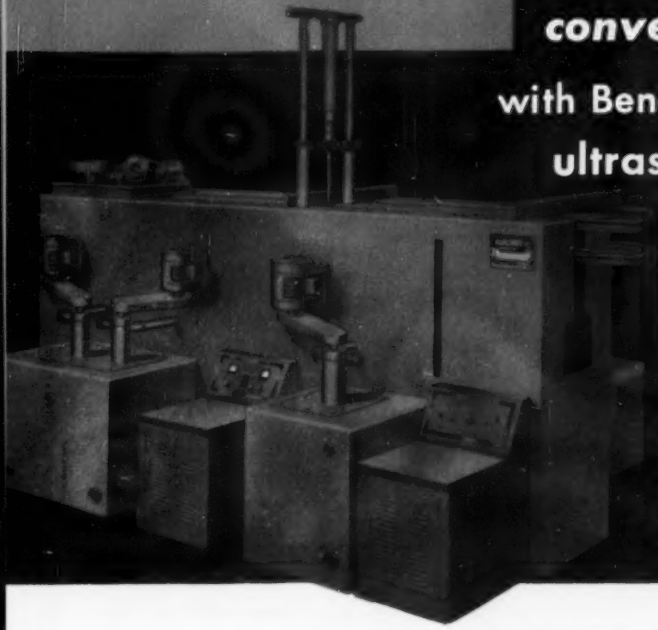
ULTRASONIC METAL CLEANING—BETTER, AT LESS COST!

Ransohoff

automatic indexing double monorail conveyor

with Bendix-perfected ultrasonic unit



CONVEYORIZED ULTRASONIC CLEANING SYSTEM

"Scrubs with Sound" saves time, space and money

- Wash • Rinse
- Ultrasonic Cleaning
- Rinse • Dry

Combining an indexing conveyor with proven ultrasonics, the Ransohoff Conveyorized Ultrasonic system handles "tough" cleaning jobs automatically.

Machined parts with blind holes and intricate recesses, buffed parts of all types and general "hard-to-clean" parts, "come clean" quickly and economically!

Operation of the machine shown above includes: wash, rinse, ultrasonic cleaning (filtered), rinse (filtered), and dry (filtered). Sequence can be changed to suit your work.

Ransohoff Ultrasonic systems clean with a combination of high pressure "walking sprays" and the "scrubbing action" of ultrasonics using *safe, low-cost water solutions.*

Complete Conveyorized System Operating In Our Experimental Department available for Ultrasonic Cleaning of Your Parts. Send Sample for Free Test, or write: Ransohoff, Inc., 610 North Fifth Street, Hamilton, Ohio.

Ransohoff

An old name... the newest ideas

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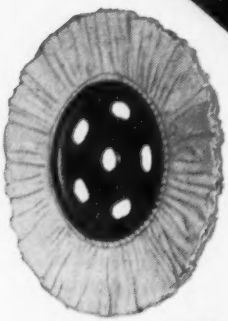
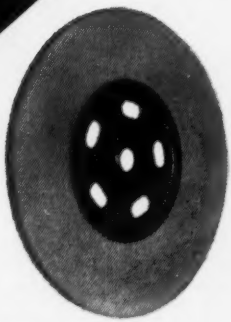
FORMAX

the Perfect Combination

FROM START TO FINISH





ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

Descriptive Catalogs Sent on Request

FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

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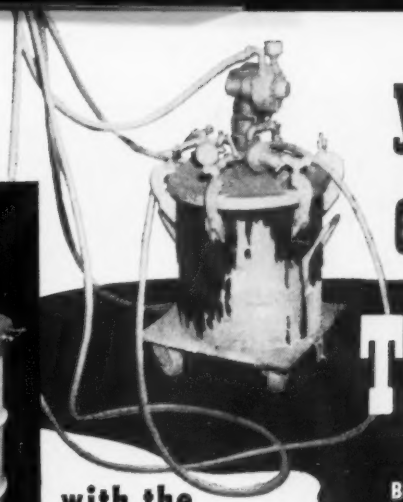

you can eliminate THIS { messy waste and container transfer

with the **NEW** air-operated **BALCRANK®** *Jet Power* **PUMP for paint**

For over 50 years Balcrank has served the Machine Tool and Automotive industries, specializing in pressure-pumping of oils, greases, viscous and abrasive materials.

NOW — Balcrank research and the best engineering skill have developed a NEW pump for paint and allied products.

New design provides for trouble-free handling of all paints, including ferrous oxide and other abrasives commonly affecting pump service.

Balcrank Paint Pumps and Accessory Equipment installations have already established proven performance records. Our Engineering Staff can adapt this experience to your particular needs.

Balcrank Pump assemblies for paint shops

- Pump primer or finish materials at HOT or cold temperatures.
- Provide constant pressure and volume at spray guns without pulsation.
- Maintain continuous flow without pressure in or on the container.
- Supply up to 8 or more spray guns — either syphon or pressure type.
- Include air-operated propeller type agitator to insure uniform mixing.
- Eliminate drum-transfer waste and costly clean-up time.
- Eliminate conventional pump packing seals — which wear, then leak.
- Models for 55 gallon drums, with or without airlifts, 5 and 10 gallon pails or line systems out of storage tanks.

Can we send you a copy of the new FREE catalog?

Our sales representative has a story that will make "dollars and sense" to you. Address your inquiry to Department 212.

INDUSTRIAL **BALCRANK®** PUMPS

Write • Wire • Phone

BALCRANK INC.
42 Disney Street
Cincinnati 9, Ohio

50 YEARS of SERVICE

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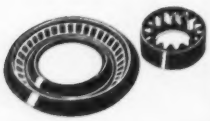
AMAZING TENSILE STRENGTH

PERMANENT FLEXIBILITY

CONTINUOUS ADHESION



RUGGED SCUFF RESISTANCE

POSITIVE INSULATION

DURABLE PROTECTION

When...

THEY'RE MICCROSOL COATED

They Meet the Highest Industrial Standards

MICCROSOL E-1003 Heat-Cured Rack Coating is a 100% solids, non-evaporating material that produces a smooth, tough, leather-like coating which will often outlast the rack. Exceptional adhesion is achieved through the use of our primers.

In addition to the outstanding characteristics listed above, tests for abrasion and resistance to all commonly used plating solutions, acids, and caustics show superior performance in comparison to similar products. MICCROSOL E-1003 has proven to excell as a coating for materials-handling equipment, baskets, hangers, and a wide variety of plating equipment parts.

MICCROSOL E-1003 has an exceptionally high gloss, allowing free drainage, and no solution carry-over.

We will be pleased to help you with your coating problems. Send us full particulars.

MICHIGAN CHROME
and Chemical Company

8615 Grinnell Avenue • Detroit 13, Michigan

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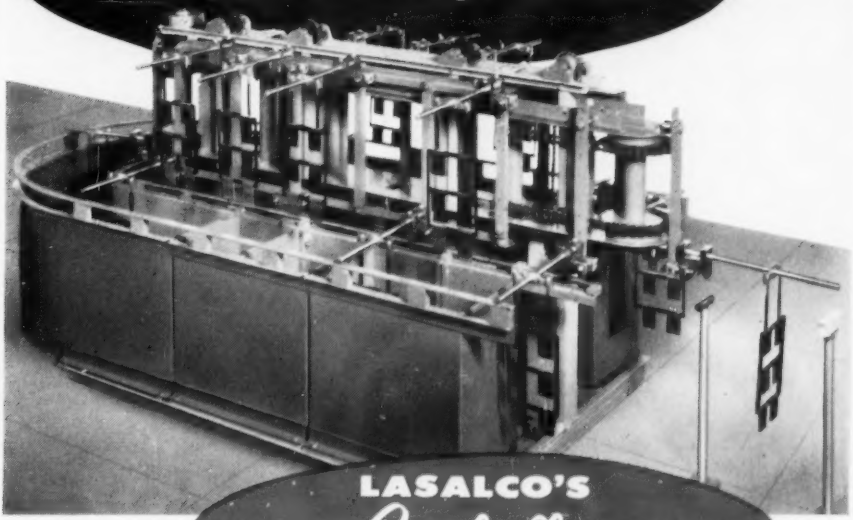

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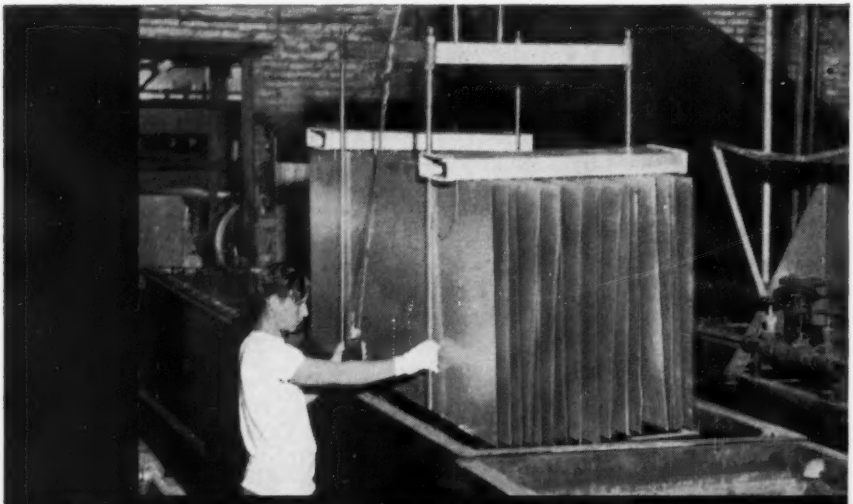

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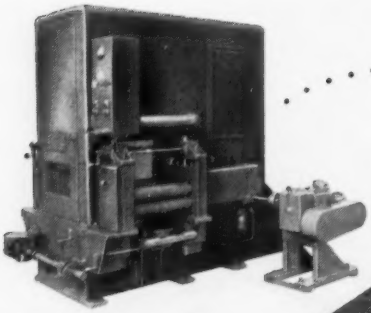

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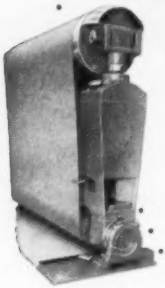

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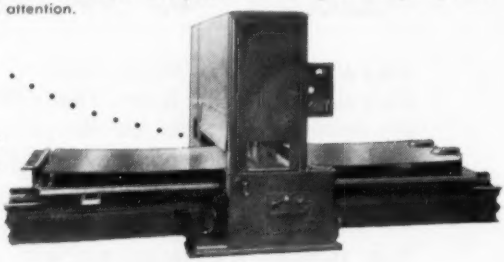

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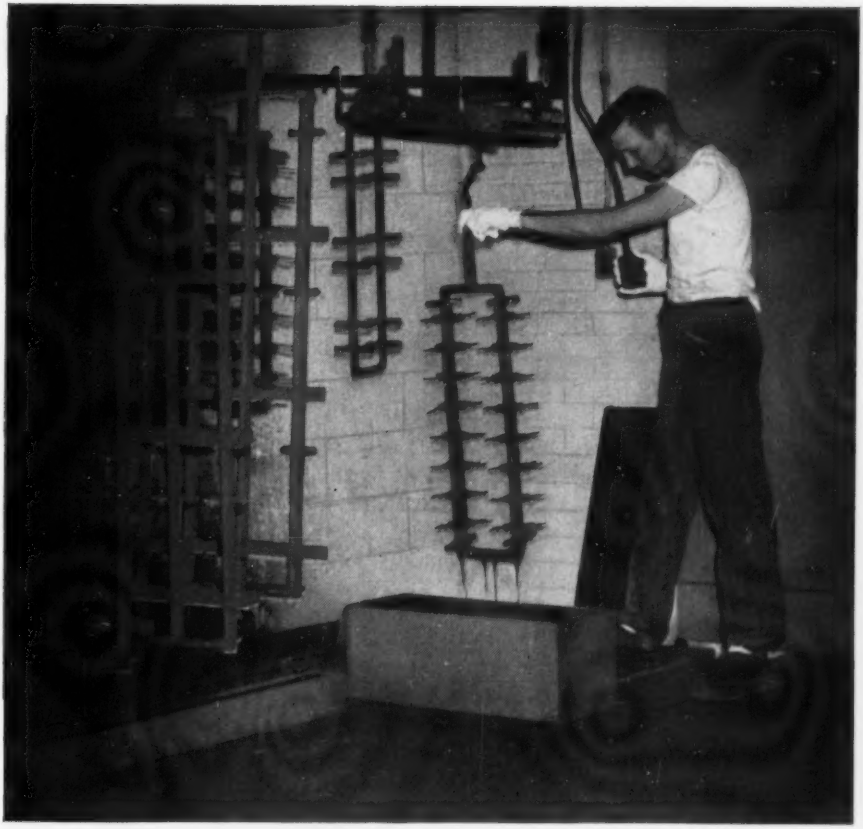

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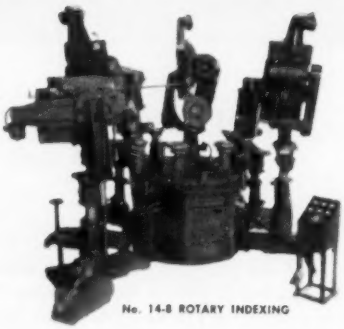

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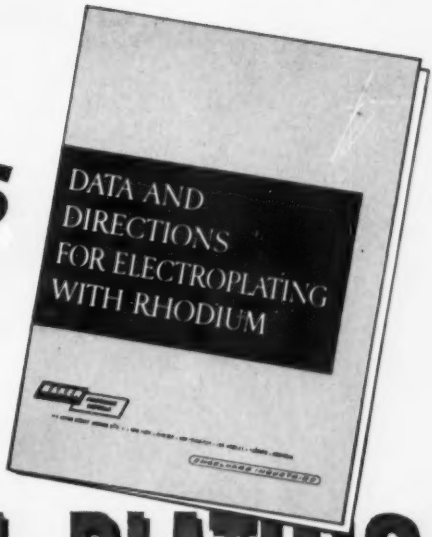

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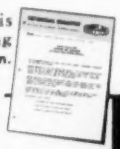

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products finishing

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Finishing Carrier

products feature finishing

Three distinct, different finishing systems are used to apply paint finishes on air conditioning equipment.

By EZRA A. BLOUNT
Editor

SCIENTISTS HAVE DETERMINED that our weather is getting warmer. This fact, plus the growing desire of more and more people for year-round, controlled-temperature living, has made the air conditioning industry one of our fastest growing.

As air conditioning has continued to grow into a larger and larger segment of American industry, it has become apparent that the service requirements which these products must withstand are perhaps the most severe of any of the household equipment group of products. This is because air conditioning equipment is used where the weather is hot and/or moist, and the devices themselves must cool the air. Thus are created the ideal conditions for corrosion and finish breakdown — heat, cold, condensation and moisture.

Plant equipment, process planning, metal pretreatment, and finishing processes at Carrier Corporation, Syracuse, New York, leader in the field of air conditioning, reflect the company's concern with the solution of the problems created by

Air Conditioners

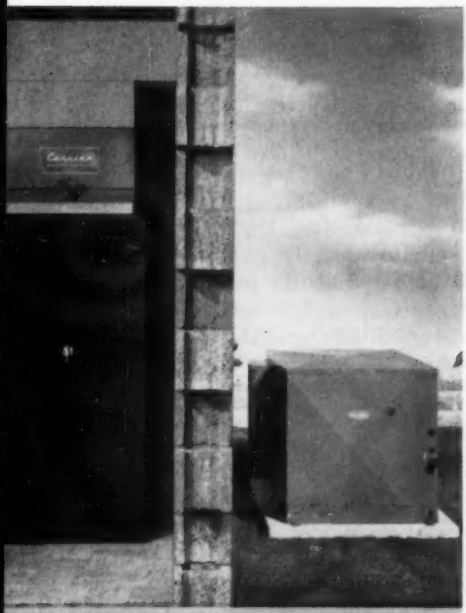


Fig. 1 (above)—Carrier Corporation's Add-On Weathermaker converts forced-air heating systems to year-round air conditioning. The small unit on top of the furnace at left of this photo cools and dehumidifies air, sends it to house through furnace's duct system. Refrigeration unit at right can be installed in yard or breezeway, requires no water.

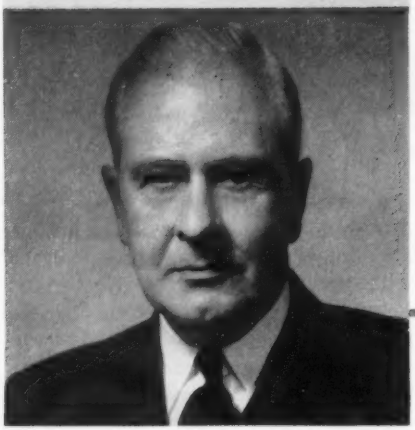
Fig. 2 (left)—This Carrier unit fits in a closet, air conditions the whole house in the summer, heats it in the winter, and circulates filtered air all year.

the conditions under which its products must function. Finishes and finish combinations are selected with great care; metal is pretreated to prevent or minimize corrosion, and finishes are applied in equipment and processes designed to produce the most attractive, salable, and long-lasting products imaginable. Some of these products are illustrated in Figs. 1 and 2.

All parts of air conditioning equipment must be protected by various finishes. Finishes and finishing methods in use at Carrier Corporation for applying organic coatings to three of these parts or elements are of particular interest. The three elements concerned are the cabinet, the condenser, and the compressor, all of which require decorative and/or corrosion resistant coatings. Each element of the assembly has its own finish service requirements. Each receives a different type finish. Three systems are used by Carrier's Syracuse plant.

Cabinet Finishing

There are three complete finishing systems located in the cabinet finishing plant. They include three spray washers, three dry-off ovens, two spray painting systems, one flow coating system, and three separate baking ovens. Some idea of the size of the installation can be gained from the fact that makeup air is supplied from an intake locat-



Cloud Wampler, chairman of the board of directors, Carrier Corporation, Syracuse, N. Y.

Facts about Carrier Corporation . . .

The Carrier Engineering Corporation, early predecessor of the Carrier Corporation, was incorporated in New York State on June 26, 1915. The founders were Willis H. Carrier, the company's first president, and Irvine Lyle, treasurer and general manager of the new company. Seven engineers with little capital, but much engineering talent and forward vision, formed the nucleus of the company. Their dreams were of more efficient cooling systems and making "conditioned air" a practical reality.

Engineering and product development were always primary objectives in the Carrier Engineering Corporation. Over the years, Willis H. Carrier and his staff conducted a ceaseless search for better equipment and refrigerants.

ed on the plant roof, at the rate of 140,000 cubic feet per minute. This finishing plant makes possible the simultaneous production of parts formed from different base metals of various gauges, coated with several paint finishes, and processed in

Tremendous impetus was given to the air conditioning field by the development, in 1922, of Carrier's centrifugal refrigerating system, which was finally patented in 1926. This system, the basis of a modern air conditioning system, was the first major advance in mechanical refrigeration since the invention of the ammonia refrigerating system in 1872. The centrifugal system, through its greater simplicity and greater safety, opened the door to comfort air conditioning, the first sale of which was made to a department store in 1924. This was followed closely by a similar installation in a theater. Public acceptance of air conditioning was assured.

In 1930, the present day Carrier Corporation was formed through the merger of Carrier Engineering Corporation with York Heating and Ventilating Corporation and Brunswick-Kroeschell Co. The latter two were primarily manufacturing concerns, while the former was both an engineering and manufacturing enterprise—primarily the first.

Carrier came to Syracuse in 1937 to make its home on Geddes Street. It was during this period that development of the small room air

different ways according to size and shape. In addition to the flexibility that it makes possible for the production scheduling department, it provides a tremendous production capacity. All parts are conveyed on three separate overhead monorail conveyor systems. The two spray conveyors run at about 12 feet per minute; the speed of the flow coat conveyor is 14 feet per minute.

The principal sections of air conditioner cabinets are formed from Armco zinc-coated steel and uncoated steel. After the parts are formed by blanking, notching and punching, the partially formed sheets are loaded on an overhead monorail conveyor to be washed and treated with a rust preventive

conditioner was carried on. However, few sales were made, with volume production to come only after World War II.

During the war the nation's production was greatly aided by the Carrier Corporation, which produced cooling and refrigerating equipment so essential to the nation's defense, as well as various military items unrelated to its own field. An outstanding achievement was made in designing a wind tunnel to simulate freezing, high altitude conditions.

Since the war Carrier has enjoyed rapid growth. In 1947 the present Thompson Road site on the Syracuse outskirts was acquired from the government in what Mr. Cloud Wampler, chairman of the board of Carrier, then termed "the greatest forward step in the firm's history."

Since then additional buildings have been erected and others are going up. Soon a new $5,000,000 administration and research center will look over the vast Carrier facilities at Thompson Road. Employment too, has kept up with this pace, with nearly 6,000 people now employed at the Syracuse plants.

Carrier products and installations range around the globe, from the beautiful United Nations building in New York City, to the Bank of India in Bombay and the House of Parliament in South Africa. Six of the ten largest passenger liners afloat, including the Queen Elizabeth, are Carrier equipped—American industry is making increasing use of Carrier air conditioning to raise the efficiency of personnel and maintain better quality control.

Other interesting applications of Carrier equipment include units for the U.S.S. "Nautilus," the first atomic submarine; equipment for air conditioning airliners; air conditioning units for Greyhound buses; cooling machinery for mines; zero temperature units for railroad refrigerator cars; and equipment for cooling the concrete in India's Viatarna Dam.

Many food freezers, milk coolers, and unit heaters are also Carrier built to be sold by other concerns under separate trade names.

Since the recent merger of Affiliated Gas Equipment, Inc., into Carrier Corporation, the firm not only is a world leader in air conditioning and refrigeration but in heating as well.

". . . over 8,000 parts can be coated to a film thickness of 1 mil from 50 gallons of baking enamel."

coating (Fig. 3). The parts are then carried through a tunnel spray washer (Fig. 4) in which they are first washed in a phosphate solution, rinsed in water, coated with a rust preventive and then force dried in a dry-off oven section heated by gas line burners.

Following this, the parts are formed as required, spot welded, and processed through a metal finishing operation to remove surface dents, roughness, weld marks, and other surface imperfections.

Assembled cabinet sections or parts, transported to the cabinet finishing plant, are hung on one of three finishing conveyor lines, depending upon the size and shape of the part or sub-assembly (Fig. 5). All conveyors, moving at 10 to 14 f.p.m., process the parts through washers in which they are sprayed with a phosphate solution, water rinsed, phosphatized, sprayed in cold water, rinsed in Parcolene and then dried in a U-shaped indirect-gas-fired dry-off oven.

The cleaned and phosphatized parts, still on a conveyor, proceed through an air cooling area and into a water wash spray booth where

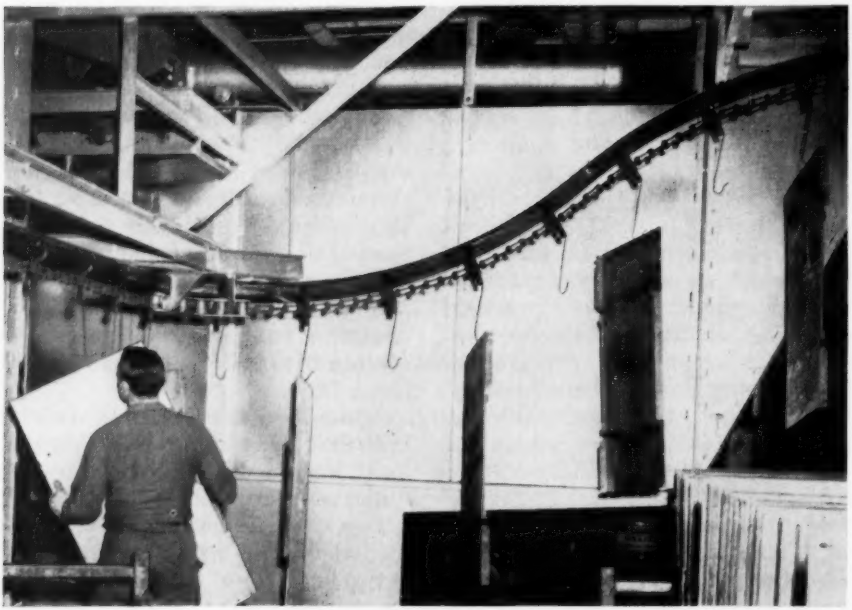


Fig. 3—Blanked, punched, partially formed sheets for air conditioners are loaded on conveyor to be cleaned, treated with rust preventive, and dried before final fabrication.

they are sprayed with an air dry primer (Fig. 6). Two operators, one in each section of a two-section spray booth, each section facing the transport conveyor from opposing sides, spray all surfaces of the various parts and sub-assemblies. The transport conveyor carries the primed parts overhead for a 15-minute set-up period. The primed parts are next taken through a set of two finish-coat spray booths, installed in the same manner as the primer booths, where baking enamel is applied. The finish-coated products proceed to roof-top ovens for a baking cycle of 30 minutes at 300 deg. F. in convection-type, gas-fired ovens. The parts are then transported by the conveyor to the assembly area, where they are unloaded and scheduled for production.

Cleaned and phosphatized parts to be flow coated enter the flow coat booth (Fig. 7) where baking enamel is flowed on the parts. The temperature and viscosity of the paint is constantly controlled. Meanwhile, the paint is continually circulated through the flow coat booth, drain tank, and a filter. Stabilizers and solvents are used to regulate and control the viscosity. More than 217 different parts are painted by flow coating, and over 8,000 parts can be coated to a film thickness of 1 mil from 50 gallons of baking enamel.

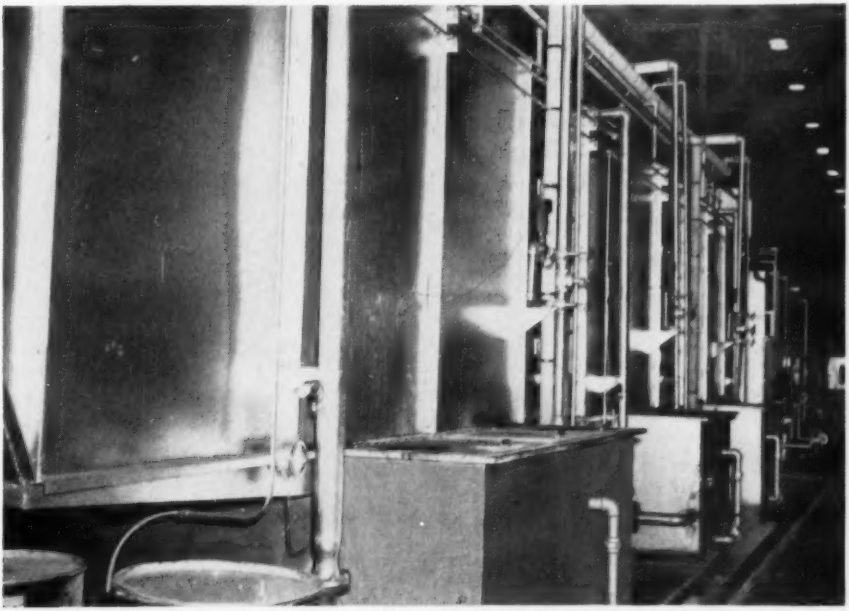


Fig. 4—Multiple-stage tunnel spray washer. Sheets are washed, rinsed, chromate rinsed and dried. Temperatures of solutions in washer are controlled by temperature regulators.

"In service, condenser coils are subjected to particularly corrosive conditions."

Following the flow coat booth, and connected to it, is an 80-foot-long vapor drain chamber or drip tunnel. Three exhausts, properly located in the drain chamber, control the vapor density of the solvent which evaporates from painted surfaces as parts move through that chamber. By this means the proper flow-out of the paint film is secured, and the draining of paint completely off the metal parts is avoided. The entire flow coat system is fitted with automatically controlled carbon dioxide units which will automatically extinguish any fire caused by ignition of the solvent vapors.

Flow coated and drained parts proceed directly to a roof-top baking oven. After baking, the parts are routed to the proper unloading or assembly area. Figure 8 is a view of the finishing area, showing the flow coat conveyor. The two spray finishing conveyor lines are directly behind this area.

Every part of the several finishing systems is kept under control by process engineers. Test panels of the various metals used, 10 by 10

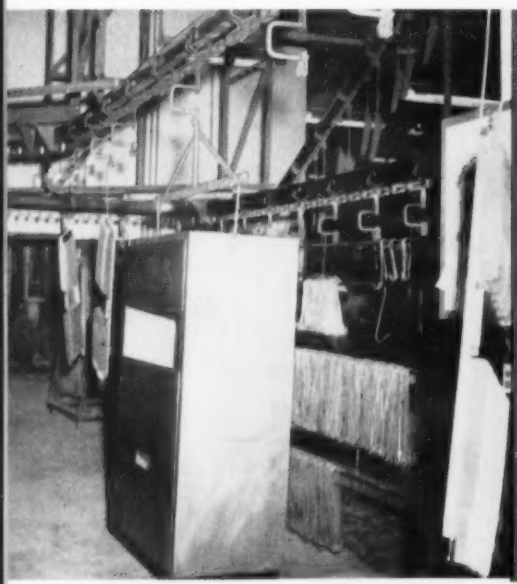


Fig. 5—Air conditioner cabinet is suspended from specially designed conveyor hangers for processing through the cleaning and phosphatizing tunnel. Conveyors move at 10 to 12 ft. per min. and carry parts through the entire cleaning, painting and baking process.

Fig. 6—Spray operator in one section of one of the two-section spray booths applies the primer to cleaned and phosphatized steel panels. Another operator in a spray booth on the opposite side of the conveyor will spray the other side of the parts with primer.

inches, are fed regularly into each system and removed after coating. These are then sheared into 4 by 4-inch samples for testing. A General Electric film thickness tester is used to measure the thickness of the baked paint film. The permeability of the paint film and its resistance to blistering are tested in aerated water at 110 deg. F. The painted panels must pass a 2,000-hour test under those conditions.

Overspray paint is collected from the spray booth water (with the aid of a paint flocculating material) by processing all spray booth water through sludge recovery pits. The paint is skimmed off into drums, and the water is filtered through screens (Fig. 9) before it is recirculated to the spray booths. Paint is thinned and mixed for spraying in tanks in a paint mixing room, and circulated continuously to the spray booths. This makes possible accurate, close control of paint cleanliness and viscosity so that top-quality spray coatings are obtained.

Coil Finishing

In service, condenser coils are subjected to particularly corrosive conditions. Since these coils are made from copper tubing and aluminum cooling fins, they are subject to electrochemical corrosion when in contact with moisture or salt air. The corrosion problem thus set up has been solved by the application of a dipped coat of primer on the assembled coils to protect the metal surface from moisture.

A completely integrated coil cleaning, dehydration, painting and baking setup is used to finish the assembled coils. Completed coils are delivered to this finishing unit, open ends are plugged, and the coils are loaded on a transport conveyor. This carries them through a cycle in which they are dipped clean, rinsed in cold water and dehydrated or baked in a convection oven.

The coils then proceed on the same conveyor to the unloading station where they are unloaded from the transport conveyor (Fig.10) and stacked on an inclined roller conveyor which carries them a short distance to the primer dipping tank. Open ends of coils are again plugged and coils are loaded on dipping frames which can be lowered into a double unit primer dipping tank

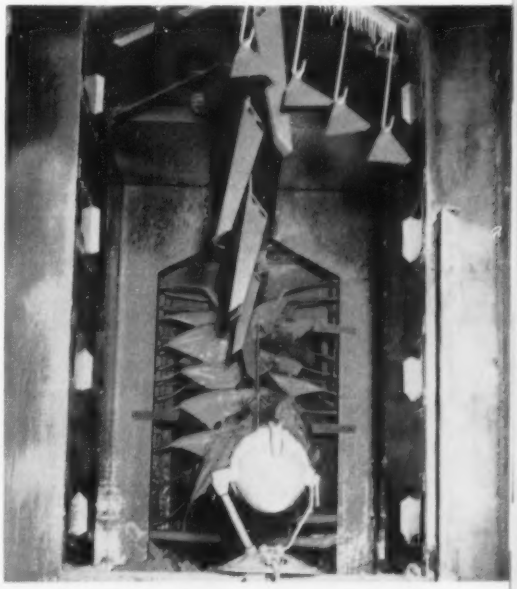


Fig. 7—"Business end" (entrance) of flow coat paint booth. Painted parts go immediately into a vapor drain chamber behind, and integral with, this flow coat booth. Paint is circulated by a pump from a storage tank to paint nozzles, shown here in action.

(Fig. 11). The dipping frames are actuated by an air cylinder. The Egyptian gray dipping primer is kept at 90 to 96 deg. F. by a water jacket around the paint tanks. Viscosity of the primer is kept at 19 seconds on a No. 3 cup. The dipping technique employed is that of a slow dip and an equally slow withdrawal. The frames rise from the primer at a rate of 2 to 4 inches per minute. Since the unit is set up so that the two dipping units can be operated independently, there is no lost motion—one unit is being loaded while the other is dipping and being withdrawn, and vice versa.

Dipped coils are unplugged and hung on the same transport conveyor, to be taken through the same oven used for the dehydration cycle. Finished coils are conveyed to the

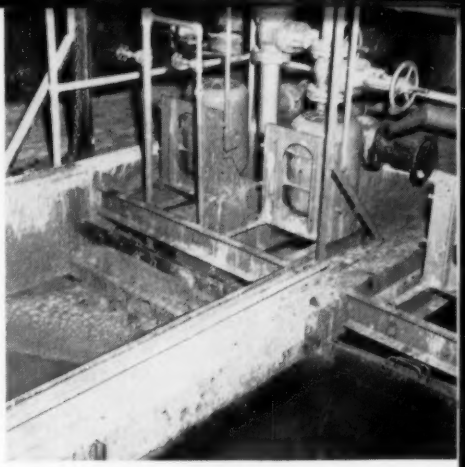


Fig. 9—Overspray paint from the water wash spray booths is collected and floated to the surface of the water by addition of chemicals to the water. All spray booth water flows to the collecting pits, where the paint is skimmed off into drums and water is filtered through screens before being pumped back to the spray booths for use as the water curtain.

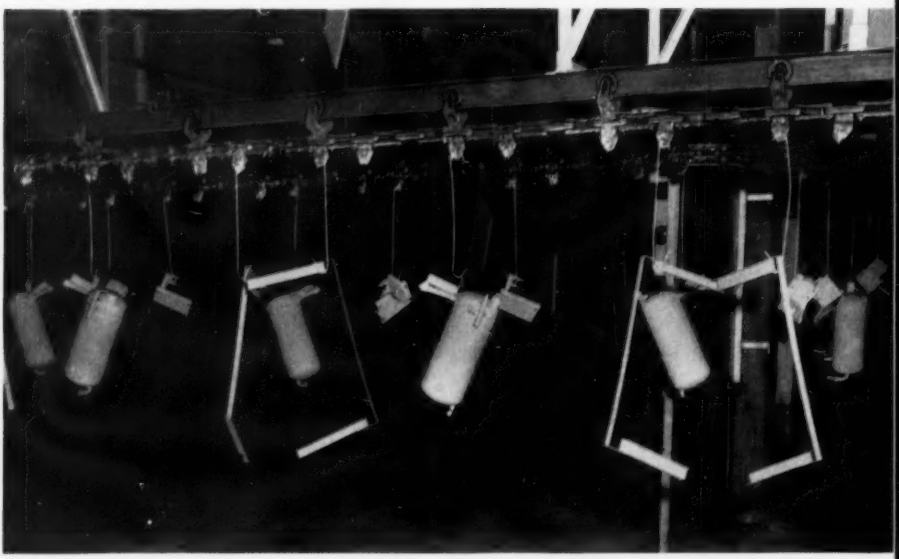


Fig. 8—Overhead conveyor carrying parts which have been flow coat painted and baked. All baking ovens in this plant are located above the finishing department, on the roof of the plant.

"The problem of preventing rust formation on the machined and cleaned cast iron compressor parts has been solved at Carrier . . ."

unloading station, where they are removed from the overhead conveyor and transferred to a transport conveyor to be carried to the proper assembly area.

Compressor Cleaning and Painting

The cleaning and paint finishing of compressors for air conditioners involves another series of entirely different finishing operations. The iron castings making up the principal parts of the compressor are shot and grit blasted to remove surface imperfections, and then machined. Following machining, the parts are processed through a power spray washer on a woven wire conveyor belt. The mechanical washer automatically washes, rinses, and dries the iron castings as they proceed through the machine on the conveyor belt.

Anyone who has worked with cast iron knows the strong tendency of the material to rust on standing in a factory atmosphere, unless protected by a film of oil or grease. The problem of preventing rust formation on the machined and cleaned cast iron compressor parts has been solved at Carrier in a most appropriate manner. The entire compressor parts storage and assembly room or area has been air conditioned; thus the humidity is kept below that value at which rusting occurs.

Assembled compressors are run

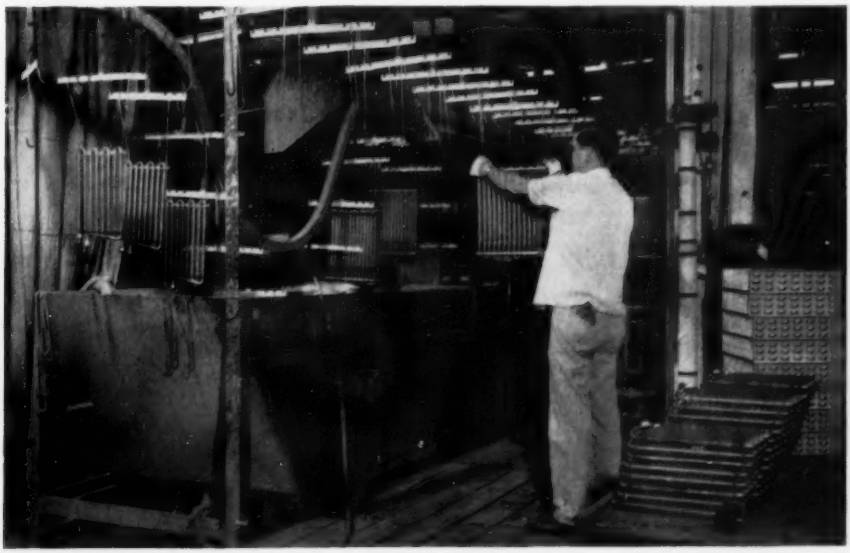


Fig. 10—Condenser coils are cleaned and dried in tanks at left, dehydrated in an oven, cooled, and unloaded onto gravity roller conveyor (lower right) for paint dipping.

in a performance test, dehydrated and leak tested. They are then loaded on working-level roller conveyors and routed through a spray booth where the exterior of the completed unit is sprayed with a gray chlorinated rubber air dry coating. Following the spray operation (and after a suitable set-up time), the distinctive blue Carrier insignia is rolled on each unit with hand-operated rollers. Units then proceed to the assembly area.

The finishing problems at Carrier are quite like those in any plant engaged in finishing metal products: the quantity finishing of various types of products with coatings that will be attractive and durable in service. The Carrier finishing installations are interesting because they illustrate that several different finishing methods can be employed in the same plant to make possible the utmost in high quality, efficient, production finishing.

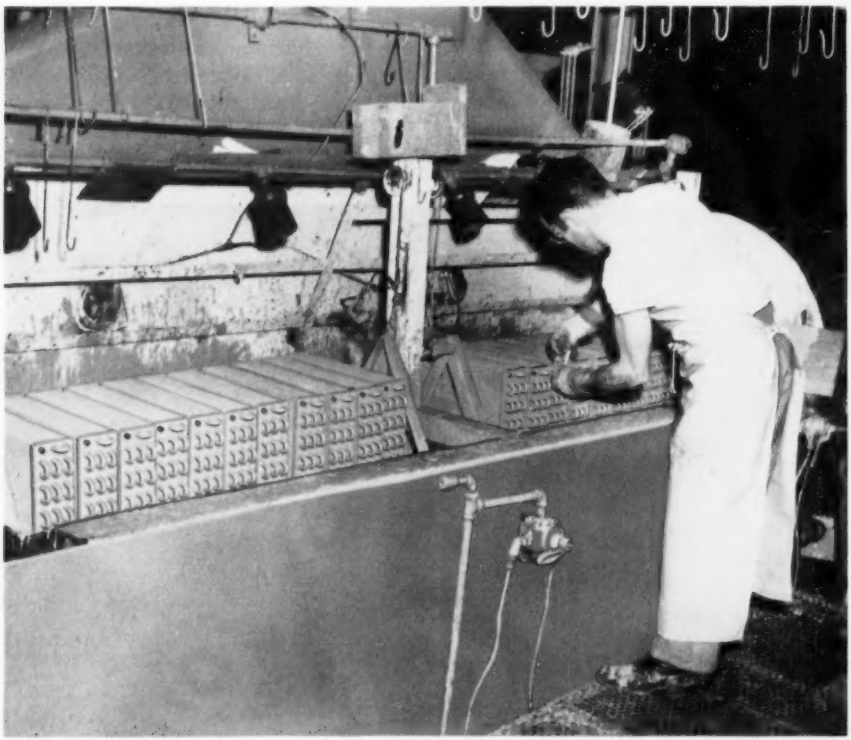


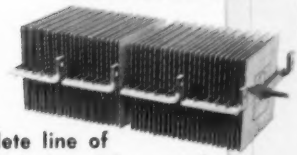
Fig. 11 — One load of condenser coils descends into the gray dipping primer as the other load emerges. Painted coils are hung on the conveyor and baked. Temperature of the baking oven is controlled by a temperature regulator. (PRODUCTS FINISHING photos.)

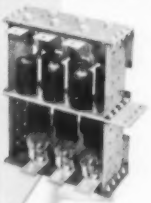
BULLETIN ER-108

Rectifiers?

you'll find all the answers at H-VW-M

Selenium and Germanium

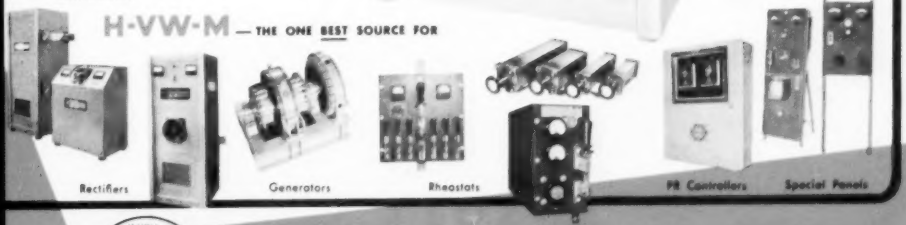




- a complete line of rectifiers designed for metal finishing operations
- a complete line of rectifier controls to give you widest flexibility.

Since H-VW-M manufactures *both* types of rectifiers—as well as low voltage generators . . . plus incorporating several choices of voltage controllers for electroplating, electroforming, anodizing and many other electrolytic applications—you can be sure an H-VW-M recommendation is the right recommendation.

H-VW-M — THE ONE BEST SOURCE FOR



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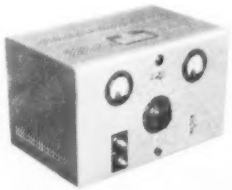
Highest quality and efficiency, flexibility, economy and low maintenance are the characteristics combined in H-VW-M's full line of self-contained and remote control Selenium Rectifiers. Possessing a high power factor and low ripple, these standard and bench-type rectifiers provide a voltage range of 6 to 48 volts DC.

H-VW-M 2500 ampere, 9 volt self-contained rectifier with tap switch control.

H-VW-M remote controlled 5000 ampere, 9 volt rectifier with tap switch control.



H-VW-M small bench rectifier—50 amperes at 6 volts.

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Greater effective selenium plate area per ampere—Individual plates are made of an aluminum alloy, with a layer of highest quality domestic triple-purified selenium.

Electrically balanced selenium plates—Each plate precision-tested to insure *electrically identical plates* in the same stack.

Corrosion-protected stacks—A coating of fungus- and moisture-proof material renders selenium stacks impervious to the corrosive conditions of average plating rooms.

Oversize transformers—Designed for continuous duty at KVA ratings of about 50% greater than the DC output KW.

Adaptability—Auto-transformer can be used for both 220 and 440 volt input, and is protected with coating of moisture- and corrosion-proof material.

Transformer compensating taps for stack aging—Also compensate for small variations in input voltage.

Complete overcurrent and undervoltage protection—Magnetic starter with 110 volt control circuit provides extra safety. Precision-calibrated thermostats over stacks cut out starter when temperature of stacks due to overload rises above safe limits.

High cooling capacity—Large plate area per ampere, plus powerful forced air cooling system, permits continuous operation with minimum heat rise—lengthens life of selenium stacks.

Ask for Bulletin ER-107

RECTIFIERS-

high current rectification problem.

tain their recommendation is unbiased and in your best interest So when it comes time to select power equipment, call your nearest H-VW-M technical representative. He'll help you specify the right unit and type of control for maximum efficiency and economy in your plant.

GERMANIUM

Hanson-Van Winkle-Munning's new low voltage self-contained and remote control germanium rectifiers are specifically designed for the electroplating industry. The germanium junction, with its efficiency and economy of operation, compactness and vast improvement in voltage regulation, opens a new and wider field for metallic rectifiers in the plating industry.

Outstanding efficiency—At full load, with output voltages of 15 volts and above, the germanium rectifier is capable of efficiencies in excess of 90%. Even at lower voltages, efficiencies are exceptionally high.

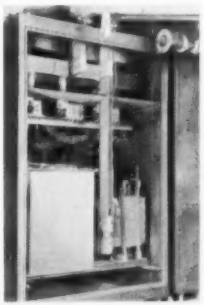
Improved voltage regulation—From no load to full load, voltage regulation of 8% or better can be maintained—no need for expensive automatic voltage stabilization devices in most cases.

Forced air cooling—Air is drawn up through the equipment, across junctions, out through the fan at the top.

Electrical protection—Overload and DC line shorts guarded against by inexpensive, replaceable link-type fuses. Overcurrent relay in DC circuit can provide additional protection when desired.

Designed for continuous 24-hour-a-day operation—At full capacity. Voltage range is from 6 to 48 volts, with current output from 1000 to 10,000 amps. Higher ratings are available for special applications.

Sturdy cabinet housing—All component parts located within housing. H-VW-M Germanium Rectifiers—though they require little maintenance—are easy to service.



Rear view, with panel open of a 3000 ampere, 15 volt germanium rectifier.

Remote control box with meters and start-stop and raise-lower buttons—for use with H-VW-M Rectifier incorporating motor-driven variable auto-transformer control.

Illustration of a compact germanium junction, the core of new unit.

Ask for Bulletin GR-100

SEE NEXT PAGE FOR CONTROL FLEXIBILITY AND SUGGESTED APPLICATIONS

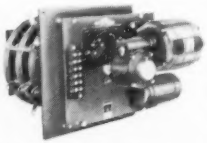
CONTROLS *for both*

Selenium and Germanium RECTIFIERS

Selecting the proper control is of utmost importance for the most efficient, flexible and economical operation of your rectifier. H-VW-M offers the widest possible selection of controls and control combinations to meet every requirement. Some application suggestions are listed below. Ask for further recommendations from your H-VW-M representative—you can be confident that you'll get top performance from your electrical equipment.

Manual Tap Switch Control

For both self-contained and remote controlled units. Remote control type incorporates tapped auto-transformer in control cubicle. In self-contained units these are located in basic cubicle. Provides 22 positions of voltage adjustment from zero to rated voltage.



Motor Operated Tap Switch Control

For simple pushbutton control of output from remote location. Used in conjunction with tapped auto-transformer. A small remote control box can be mounted on side of tank or other convenient place. Meters, pilot light, raise-lower and start-stop pushbuttons also on small remote cubicle.

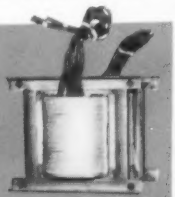
Continuously Variable Auto-Transformer

Either manual for small rectifiers or oil immersed, motor driven for larger ratings. This is the best method of voltage control since full stepless control of output voltage can be obtained from zero to rated voltage. It also achieves highest efficiency.

A raise-lower pushbutton as on motor operated tap switch control provides control.

Saturable Core Reactor

Wholly electrical in operation with no moving parts gives smooth voltage control from 10% to 100% of rated voltage providing minimum of 10% current load is drawn. Rheostat mounted on small remote control cubicle providing manual adjustment.



Automatic Voltage Stabilization

Where close regulation of DC voltage is desired to compensate for wide load changes in tank without adjusting voltage manually, a special device will automatically maintain voltage at pre-set amount. Either a voltage sensing panel in conjunction with a motor driven, oil immersed, continuously variable auto-transformer is used, or a special magnetic amplifier in connection with a saturable core reactor. Automatic constant current can also be provided.

Automatic Programming

Where different voltages are desired for special plating applications, an automatic programmer using a system of timers and controls will set the output at one voltage; operate at that voltage for pre-set time; change to another voltage at a pre-set rate; operate at new voltage for a certain time and then shut the rectifier off. There are also more simplified versions. Method of control is motor-operated continuously variable auto-transformer.

APPLICATION SUGGESTIONS

Use	Recommended Control
Batch Tank Plating	Manual tap switch.
Batch Tank Plating with wide load variations and high production	Motor operated variable auto-transformer, or motor operated tap switch.
Barrel Plating	Manual tap switch. No control rectifier.
Cleaning & Pickling	Manual tap switch. No control rectifier.
Conveyor—many stations	Manual tap switch (remote control). Motor operated tap switch. Saturable core reactor. Motor operated continuously variable auto-transformer.
Conveyor—few stations	Automatic voltage stabilization with variable auto-transformer. Automatic voltage stabilization with saturable core reactor.

Use	Recommended Control
Chrome Strike in combination with Plate Sulphuric Anodizing	Automatic programming with variable auto-transformer or special series hook-up. Manual tap switch. Motor operated tap switch. Saturable core reactor.
Color Anodizing	Automatic constant current with variable auto-transformer. Automatic constant current with magnetic amplifier and saturable core reactor.
Chromic Anodizing	Automatic programming with variable auto-transformer. Combination automatic constant current and automatic voltage stabilization with variable auto-transformer or saturable core reactor.
Electrolytic Metal Refining	Automatic current control with saturable core reactor.

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Special Reports On Finishing Non-Ferrous Metals

NUMBER III—Lustrous, Corrosion-Resistant Finishing with Chemical Polishing Iridite

WHAT IS IRIDITE®

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are widely accepted throughout industry as an economical means of providing corrosion protection, a good base for paint and decorative finishes for non-ferrous metals. Certain of these coatings also possess chemical polishing abilities that have luster-producing, as well as corrosion-inhibiting, effects on zinc and cadmium plate, zinc die castings and copper alloys. However, continued developments in this field have been so rapid that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this discussion of the many ways in which this chemical polishing characteristic can be used in final finishing or pre-plating treatments to produce a lustrous appearance with distinct display and sales appeal and appreciable savings in cost. Report I on decorative, corrosion-resistant finishes and Report II on paint base, corrosion-resistant finishes are available on request.

The degree of luster possible on a surface is a function of the degree to which the surface can be smoothed. Leveling to provide a smooth surface can be achieved by mechanical or chemical means, or a combination of these, depending upon the luster desired and the original condition of the metal. Chemical polishing effectively imparts luster otherwise difficult and costly to obtain. For this reason, it is often used to supplement or entirely replace mechanical polishing, depending upon the application and the original condition of the metal. Chemical polishing has the additional advantage of providing overall treatment of the submerged part. It reaches into even the deepest corners and recesses that are otherwise inaccessible. Certain of the Iridites are specifically designed to perform this chemical polishing operation. In addition they provide corrosion protection as do all Iridites, thus may be used either as a final finish or a pre-plating polish.

If Iridite is to be used as a final finish, in contrast to pre-plating treatment, the

Adv.

chromate conversion coating generated is allowed to remain, providing good corrosion resistance. Color inherent in these Iridite films ranges from a yellow cast to yellow iridescent. These coatings may be used without further treatment where this color is acceptable and good corrosion resistance is desired. Further, these basic coatings can be tinted by dyeing. Among the dye tints available are shades of red, yellow, blue and green. If desirable, the basic coatings can also be modified by a bleach dip leaving a clear bright or blue iridescent finish. In all cases bleaching reduces corrosion resistance.

As examples of this type of final finishing, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, lustrous chemical polishing of the as-cast surface of zinc die castings. Thus, in many cases, sizeable savings in finishing cost are realized by elimination of plating costs. This economical method can be used on tools, appliance parts, toy pistols, locks and many other small castings. Another example is the treatment of copper and brass parts, such as welding tips, to eliminate buffing and provide additional corrosion resistance. In many cases, handling costs are reduced appreciably by replacing piece-part handling with bulk processing. Still another example of the use of this chemical polishing and protective quality of Iridite is a simple system of zinc plate, Iridite and clear lacquer instead of more costly electroplated finishes. Typical of this type of lustrous finish are builders hardware and wire goods.

As a pre-plating treatment, in contrast to final finishes, Iridite can be used to chemically polish zinc die castings or copper prior to plating. In such cases, Iridite should be applied as an in-process step, so that the protective film is removed before the plating cycle. The savings in handling, material and labor costs are obvious. This process has made it practical to plate chrome directly over copper on steel, conserving nickel, yet producing a lustrous chrome finish. Used after stripping faulty plate in reprocessing zinc die castings, Iridite restores luster to the casting, making possible replating without blistering.

Other Iridite finishes are available to produce maximum corrosion resistance, a wide variety of decorative finishes and excellent bases for paint on all commercial forms of the more commonly used non-ferrous metals. As a final finish, appearance ranges from clear bright to olive drab and brown and many films can be bleached or dyed. As a paint base Iridite provides excellent initial and retentive paint adhesion and a self-healing property which protects bare metal if exposed by scratching. Iridites have low electrical resistance. Some can be soldered and welded. The Iridite film itself does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product demands the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

For more data circle **162** on Reader Service Card *Adv.*

Automatic Cleaning and Anodizing of Aluminum at Douglas Aircraft

Only two tanks are used in treating aluminum aircraft parts to meet rigid military specifications . . .

By GILBERT C. CLOSE

THE PROCESSES INVOLVED in cleaning, surface treating, and anodizing aluminum have been mechanized at the Torrance, California plant of the El Segundo Division of Douglas Aircraft Company. The department now occupies only 600 square feet instead of the 2,000 square feet formerly required.

Only two tanks are used instead of the ten normally employed in this type of work. One of the two tanks is an improved version of a conventional anodic setup. The other tank, called an "Auto Cycler," is used for all the treatments that precede and follow anodizing, and for all the process cycles in the Alodine treatment of aluminum. Each tank is 31 feet long, 3 feet wide, and 7 feet deep—big enough to handle the largest wing spars and airplane skin sections now being produced at the Douglas Torrance plant.

The Auto Cycler is the heart of the automatic setup. It applies the solutions in the sequence required while the work is suspended in a single tank. Instead of thousands of gallons of solution for each treating cycle, approximately a hundred gallons are used. This minimum of solution is admitted into ten transverse troughs along the bottom of the tank. Each trough contains a rotor-type impeller driven at 1750 r.p.m. by a 7½-h.p. motor. These impellers hurl the solutions upward onto the work just like water is handled in an ordinary automatic dishwasher. After each treating cycle, drains open automatically to allow the solution to leave the tank. As a rinse follows each chemical treating cycle, a clean tank is assured for the next operation. At the end of each processing cycle, hot air is admitted into the tank to dry the work.

The Alodine solution is the only one that is reused in the Auto Cycler. This solution is kept in a 180-gallon storage tank adjacent to the Auto Cycler, where it is maintained at the proper treating temperature. During the Alodine cycle,

this solution is admitted into the tank troughs, is hurled upward onto the work by the impellers, then drains back into the storage tank after the cycle is completed. A pH meter on the Auto Cycler control panel indicates the condition of this solution at all times.

All other solutions and rinses are discarded after their use. The alkali cleaner solution is formed by metering the proper quantity of a highly concentrated alkaline solution into the water entering the Auto Cycler to produce a cleaning solution of the desired strength. After the cleaning cycle, this solution drains away. The soap concentrate is kept in a 105-gallon supply tank adjacent to the Auto Cycler.

The Auto Cycler's ten-foot control panel contains three fully automatic control circuits, each actuated by a single push button. One button controls the "Anodic Preparation Cycle;" a second controls the "Anodic Finish Cycle;" and a third controls the "Alodine Treatment Cycle." After the work has been placed in the Auto Cycler, the button controlling the desired treatment is pushed and starts the sequence of operations necessary to perform the indicated treatment. Timing is automatic. A light on the control panel indicates the process cycle being applied at any time. After each treatment cycle, drain valves open automatically and empty the tank. Then other valves open automatically to admit the next solution in line. After each complete

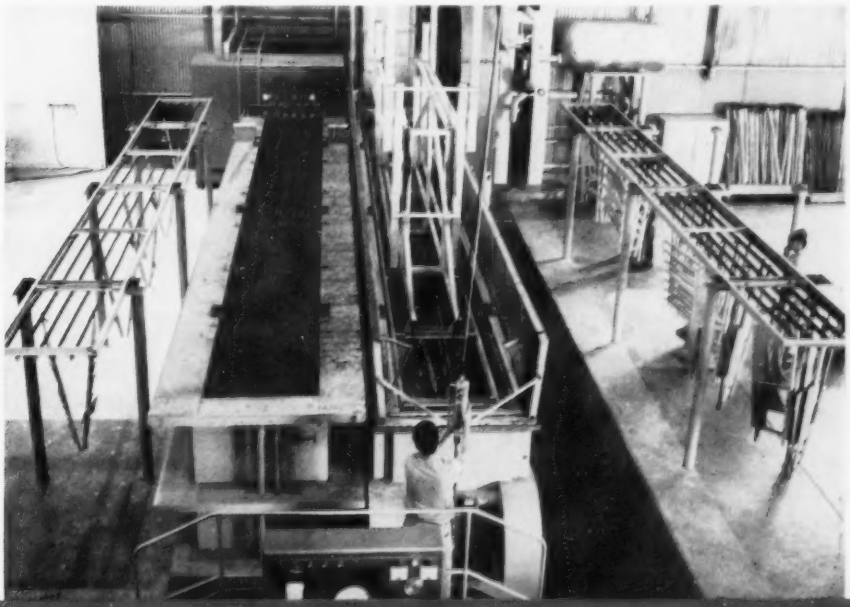

Fig. 1—Work load being lowered into the Douglas Auto Cycler. A single push button starts and completes the entire sequence of operations necessary to complete this metal treatment.

"The conventional electrical contact harness has been replaced by an aluminum grid . . ."

cycle, hot air is automatically introduced into the tank to dry the work. The Auto Cycler cover cannot be opened during a processing cycle. The lock on the cover is automatically released when the cycle is completed.

Time studies indicate that the Auto Cycler speeds the work substantially, as there is no lost motion between the treatments involved in a process—that is, the work does not have to be transferred from tank to tank. The "Anodic Preparation Cycle" requires about 6 minutes; the "Anodic Finish Cycle," 8 minutes. These treatments are used before and after the 40-minute anodic treatment, and, of course, the work must be moved from the Auto Cycler into the anodic tank and then back again

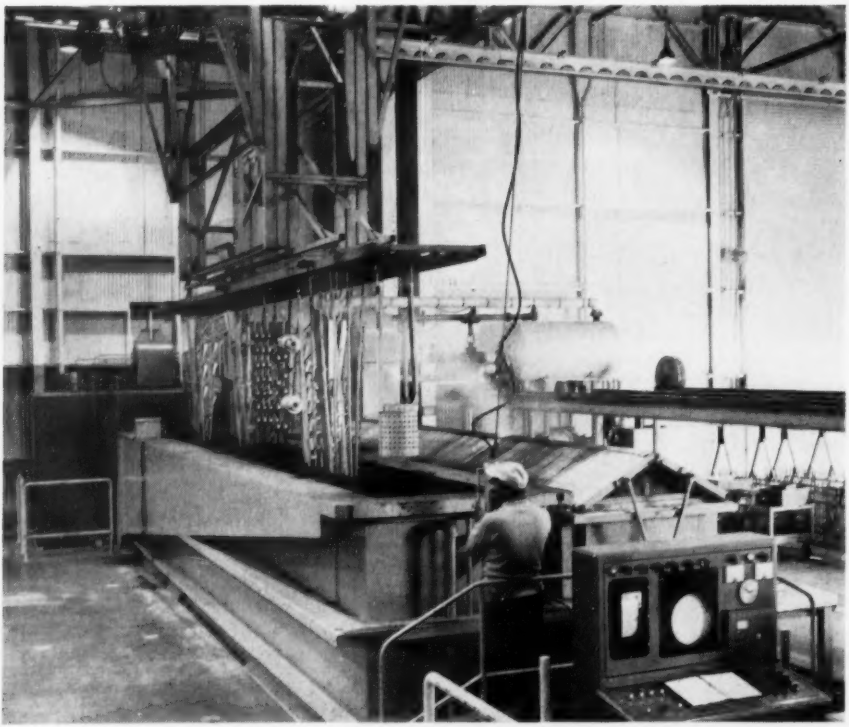

Fig. 2—A work load being transferred from the Auto Cycler into the anodic tank. Note specially designed aluminum grid used to replace the conventional contact harness. The grid serves also as a work holder. Panel in foreground is used to control the processes.

between these cycles. The Alodine treatment cycle requires about 20 minutes. These time intervals include hot air drying when necessary. There is no down time on either tank. While one work load is being anodized, other work loads are being Alodine treated.

Exhaustive pre-production tests proved that the motorized rotors, impelling the solutions upward at high velocity, would give complete coverage provided certain precautions were observed in racking the work. Also, the work must be hung in a manner to provide good drainage between the treating cycles.

Stainless steel was used for constructing the tanks, baskets, and racks. Work is handled into and out of the tanks by a twin-track overhead hoist and conveyor. A steam heat exchanger heats the solutions and warms the air that is used for drying the work.

The anodic tank used in conjunction with the Auto Cycler has several improvements. The conventional electrical contact harness has been replaced by an aluminum grid, from which the work load is suspended. This grid makes automatic contact with a current supply at one end of the tank when the grid is lowered into position at the start of the anodic cycle. After the cycle is completed, these contacts open automatically and break the current supply. Here again timing is automatic. It is impossible to use the hoist to remove a work load from the anodic tank before the anodic cycle is completed, as an electric eye is so arranged that the descending hoist will break the light beam and cut the current supply to the hoist motor.

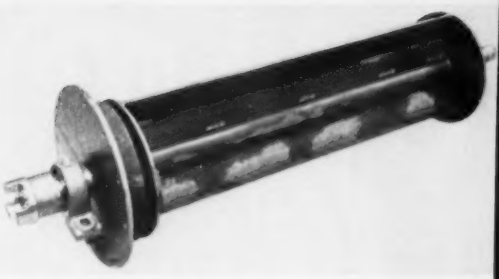

Fig. 3—Close-up of one of the impellers used in the Auto Cycler to hurl the solutions upward onto the work. It is driven at 1750 r.p.m. by a 7½-h.p. motor. Ten such impellers are employed in the ten solution troughs along the bottom of the Auto Cycler. 100 gallons of solution are used during each processing cycle. (Photographs courtesy El Segundo Division of Douglas Aircraft Company.)

The efficiency of the entire installation has been improved by several innovations. Fumes from the anodizing tank, for instance, are drawn off and routed through a fume washer. This de-contaminates the air. This same air is then run through steam coils and through the cycling tank, keeping it up to temperature. Eventually this same hot circulating air is used to dry the work.

The best recommendation for the new Douglas automatic metal treating installation is that it has met specifications for use in treating parts for Navy military airplanes.

Douglas plant engineers who designed the new system point out that the Auto Cycler principle may be applied in cleaning or treating any kind of metal with various solutions as long as an electrolytic reaction is not involved.

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Properly Formulated Buffing Compounds Can Make Cleaning Easier!

A buffing compound tailored to the application can often help to make cleaning cycles 100 per cent effective . . .

By **EDWARD VAN ZANDT**
McAleer Manufacturing Corp.

WHEN REJECTS OCCUR from failure to clean parts thoroughly before plating or paint finishing, should cleaning methods only be suspected as the cause of the trouble? Not always. Recent research shows that some cleaning difficulties can be remedied before the work is dipped into the first cleaning tank. Specifically, formulation of buffing compounds that can be removed quickly in the cleaning cycle used by the finishing plant can be very important in eliminating cleaning troubles.

One reason that buffing compounds are difficult to remove from metal is that they harden after the buffing operation. The particles remaining on the metal harden and solidify, and resist removal.

Buffing compounds are composed of abrasive grain and grease. Grease serves as a binder for the abrasives, and as a lubricant. The abrasive abrades the metal to the degree desired. In the cleaning cycle, the greases used in the buffing compound must be emulsified and/or saponified if proper cleaning is to be assured.

The result is that buffing compounds must be formulated to cut according to need; the other requisite is that they contain binders that can be removed quickly by the cleaning method used.

Certain greases and oils (primarily mineral oils) do not react with alkalis to form soaps: they are unsaponifiable. It is often these unsaponifiables in buffing compounds that later cause difficulties in cleaning. Thus the chemist in formulating buffing compounds tries to eliminate the unsaponifiable oils and greases whenever possible. He tries to use saponifiable vegetable

← For more data on advertisement on opposite page circle **163** on Reader Service Card

and animal oils almost exclusively.

When the buffing compound manufacturer has not eliminated all the unsaponifiable material that cannot be removed in the alkaline cleaning tank, trouble is likely to occur. When too much unsaponifiable material is present, emulsification is incomplete. Failure to get 100 per cent emulsification means potential rejections from a host of difficulties that spring up after the coating has been applied over the improperly cleaned surface.

Complete avoidance of unsaponifiable elements in the compound is not always practical. Sometimes small amounts of these materials can contribute to better adhesion of the buffing compound to the buff or

"Calm yourself—it was bound to happen!"

give more "drag," where desirable.

Saponifiable oils such as stearic acid, tallow, fish oils and their hydrogenated derivatives, often can be used in buffing compounds to make cleaning easier. They saponify when they react with the hot alkaline cleaning solution, and thus aid in compound removal.

Their use, however, is not always the complete answer. In some applications they can even *retard* proper cleaning action. This is true when the material being buffed is a softer, non-ferrous metal, such as a zinc die casting or an aluminum alloy. Frictional heat generated during buffing operations allows the fatty acids to form heavy metal soaps with these metals, such as zinc, aluminum and magnesium stearates. The presence of these soaps is actually beneficial during buffing, but they are not quickly soluble in water. They build up in crevices and holes and thus are difficult to remove during cleaning cycles.

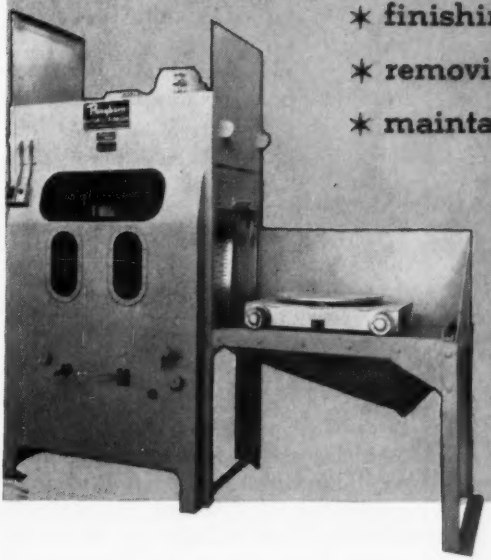
Surface active agents are used in many buffing compounds to make cleaning easier. These chemicals lower surface tension, and allow the cleaning solution to "wet" the metal more easily, thus displacing the unwanted grease and oil.

Alkali-soluble wetting agents can be added to the grease binder used in buffing compounds to aid in electrolytic cleaning. They do so by decreasing surface tension in the electrolytic cleaning solution and thus aid in releasing hydrogen gas from the metal's surface during cleaning.

Another application for surface-active agents is the use of non-ionic

New Pangborn Hydro-Finish

solves such cleaning problems as:



* removing heat treat scale
* finishing threaded sections
* removing grinding lines
* maintaining dies and molds
* preparing surfaces
* deburring
* surface finishing
* improving cutting tool life

Pangborn has redesigned the Hydro-Finish for added efficiency and easier handling. *Originating the use of air jet sluriators to eliminate pumps,* the new Hydro-Finish represents a lower investment as well as a lower maintenance cost. Optional equipment simplifies overall operation. Investigate Pangborn Hydro-Finish now!

For details, send for Bulletin 1403 now! Write PANGBORN CORPORATION, 5000 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment.*

Pangborn

BLAST CLEANS CHEAPER

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HAVEG News

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- Full valve opening for **fuller, straighter flow!**
- Guided stem for **positive seat alignment!**
- Smooth, sliding stem action permits **lower packing pressure—longer packing life!**
- Double threaded stem for **faster valve control!**
- Removable seat and stuffing box for **easy maintenance!**
- Valve seats in full open position and can be re-packed in this position **while in operation!**

Haveg Y-Valves are available in standard pipe sizes, complete with asbestos-graphite unless otherwise specified and can be equipped for easy connection to air, diaphragm or motor-operated control equipment. Discuss your requirements with a Haveg corrosion engineer.

**So does this diaphragm valve—ask for data on it, too.*

H-607-R

HAVEG PLASTICS OF TOMORROW
SOLVE YOUR CORROSION PROBLEMS TODAY

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surface-active agents to render the greases used in buffing compounds more soluble in the hydrocarbon solvents used for degreasing.

Oil-base liquid buffing compounds are formulated with sulfonated oils to make cleaning easier. These oils are water soluble and aid in emulsification during cleaning, yet function as oils during the buffing cycle.

The buffing compound formulator can best tailor the compound to the work being buffed if he knows exactly what is expected of the compound. Sample parts are often sent to the compound manufacturer's laboratory for testing prior to a production run. The basic function of a buffing compound, of course, is to provide the proper abrading action or "cut" and to produce the desired "color" or surface finish. Knowing the cleaning cycle that is to be used, however, the compound manufacturer can recommend a compound that will have the proper proportion of abrasives, saponifiable materials and emulsifiable materials to do the job effectively and yet not cause the formation of dirt that will be difficult to remove.

To cite a typical example, one manufacturer recently encountered excessive rejections for several days. Consulting the buffing compound manufacturer, he found that he was using a buffing compound formulated for use prior to alkaline cleaning. But he was cleaning his products in a solvent degreaser. By switching to the proper compound his trouble was eliminated immediately. If he had specified the proper compound when ordering it, he could have avoided several days of low production.

AT CANADIAN PRATT & WHITNEY AIRCRAFT . . .

ALMCO barrel finishing SAVES 97% on deburring and finishing of spark plug bushings

CUTS COSTS BY $2,430 — Maurice Harrison, Supervisor of Process Planning, shows threaded spark plug bushings deburred and finished with Almco equipment and processes.

SAVES .10125 ON EACH BUSHING — Deburring and finishing spark plug bushings formerly cost $104.20 per 1000 when CP & W used speed lathes, portable power tools and other hand methods.

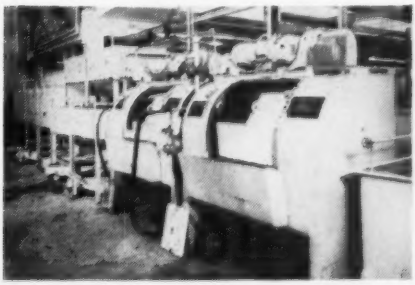
After installing two DB-200 Supersheen units, records showed a cost cut of 97%. This equipment turns out 1000 bushings in 45 minutes, saves $101.25 per 1000 in finishing costs, releases grinders and finishers for other duties.

This year CP & W will process 24,000 spark plug bushings, *save $2,430 on this one part alone.*

Before installing controlled-type barrel finishing, inspectors returned for re-work an average of 125 bushings from each 1000 (12½%). Almco Supersheen equipment and processes now finish these parts to a degree of uniformity that is virtually free of rejects.

DESIGNED FOR MANY METAL FINISHING OPERATIONS — Almco equipment and processes are also used for descaling, degreasing, grinding, burnishing, work-hardening, rust-inhibiting, polishing, etc.

Write for address of Almco sample processing lab or branch office in your area. Your sample parts will be processed promptly to your specifications. There's no obligation for a complete report.



Two DB-200 Almco machines, using Supersheen bonded abrasive chips and compounds, deburr and polish 1000 spark plug bushings in 45 minutes at CP & W.

SEND FOR FREE 52-PAGE BOOK

Full of facts and processes on barrel finishing. Includes detailed cost chart on finishing of typical parts. Send for your copy today.

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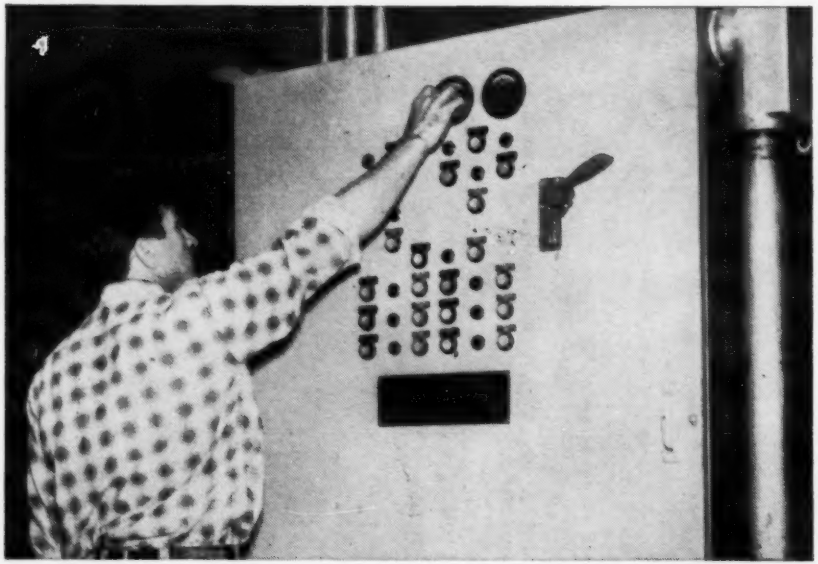
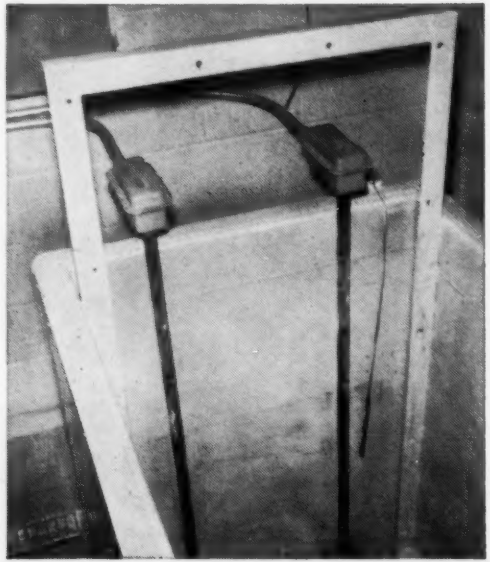
New City of Detroit Sign Plant chooses

CHROMALOX Electric Heat

for maximum production line efficiency



This single control panel helps maintain maximum efficiency of work flow and processing. From it, conveyors, tanks, and oven heaters are controlled.



Stripping off old paint, cleaning, rinsing and pickling are done in seauence in five tanks, heated by thermo-

From stripping paint off old signs to baking the new finish, signs are turned out with minimum delay at the new sign plant of the City of Detroit.

Paint stripping, cleaning and rinsing, pickling and rinsing are the first operations, taking place in five tanks, side-by-side. Chromalox Immersion Heaters in each tank were built with sheath material adapted to the solution. Inconel was used for the caustic stripping solution, Stainless Steel for the pickling tank, and Copper for rinse water.

After background paint is sprayed on, the signs are baked in a 90kw oven, heated by 36 Chromalox Radiant Heaters in vertical banks staggered from side to side. Next, lettering is applied by either silk screening or roll coating on raised letters. Then the signs again pass by conveyor through the oven for a final baking.

This well planned oven features two Chromalox Input Controllers, which adjust individual heater output to varying work sizes, conveyor speeds, different finishes. Heat intensity can be varied at the turn of a dial from 4 to 100 per cent of rated capacity.

If your production line heating is a problem . . . chances are electric heat can do the job better . . . and Chromalox can do it best. We'll be glad to send you helpful information, or better, have a Chromalox Sales Engineer give you personal attention.

A final baking in this electrically heated oven, and signs of all types and sizes are ready for the well-marked streets of Detroit.

TWO BIG HELPS FREE

Bulletin CS604—10 Big Advantages of Chromalox Far-Infrared

Bulletin 750—Chromalox Electric Heaters for the Electroplating Industry

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Dr. C. Fred Gumham
Head, Dept. of Chemical Engineering
Michigan State Univ.

SPOTLIGHTING FINISHING PROGRESS

Metal Deposits from Gases*

Wire can be plated continuously by passing it as a long strand through the same sequence of operations as was described previously for conveyorized objects. The desired temperature can be achieved on the wire while it is entering or in the plating chamber, by passing an electrical current through the wire. The power input and hence the temperature is affected by the electrical resistance of the wire itself, and is readily regulated by simple electrical controls. Either sliding or rolling contacts to the wire are possible; one contact is located outside each end of the gas plating cell.

The speed of the wire plating process is regulated by the take-up drum. Speed provides a further means of controlling the process, although it is generally preferable to operate at the maximum practical speed and to obtain the desired control by other means. In a typical wire-plating sequence, the wire passes continuously from a pay-off reel, first through an atmosphere of hydrogen where it is electrically heated and cleaned by reduction of oxide films, then through a gas lock into the gas plating chamber. Further controlled electrical heating is provided for the plating operation. The wire leaves the plating cell through a gas lock, passes through a controlled-atmosphere annealing zone, a final air lock, and thence to the take-up drum.

* The first section of the article *Metal Deposits from Gases* appeared on pp. 67-78 of the November issue of PRODUCTS FINISHING—Ed.

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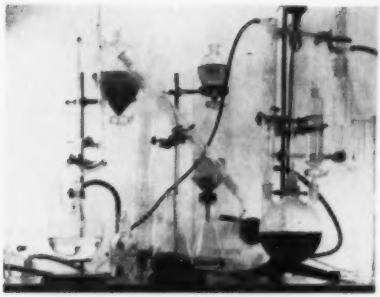
COMPOUND Z-10



Enthusiastic acceptance can only be earned by exceptional performance. Compound Z-10 in Rohco Zinc Brighteners is the exclusive ingredient that makes the difference in:

BRIGHTNESS—consistently brightest zinc with simplest control. Highest covering power and widest current density range for uniform deposits.

STAYING POWER—only small additions occasionally required proportional to production. Most economical of any to use.

Be sure your zinc plating has top-notch quality with economy. You'll be positive when you use Rohco!

Send coupon for information on ROHCO ZINC BRIGHTENERS, today!

R. O. HULL & COMPANY, INC., 1304 Parsons Ct., Rocky River 16, Ohio

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RUSH recommendations on ROHCO ZINC BRIGHTENERS for these conditions: ☐ Bbl. ☐ Still ☐ Post-plating Dip ☐ No Plating Dip

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Gas plating is not restricted to a metal base. Deposits can be made on any solid surface. Continuous filaments of non-metallics can therefore be plated in the same manner as wire. Plastics, textile fibers, glass, and paper have been metal-coated by the gas plating technique. Resistance heating is, of course, not possible for these materials (at least, not until some metallic deposit has been produced); but preheating or other means can be used to provide an equivalent temperature.

Features of Gas Plating

One of the more valuable features of the gas plating process is its adaptability to any shape of object. Deposits occur equally well on all heated surfaces, and there is no difficulty in producing as heavy a layer as is desired, even on inside surfaces and corners.

The extremely high rate of constant deposition, regardless of thickness of metal deposit, compared to conventional plating processes, is an obvious advantage of gas plating. A one-mil thickness of metal can be deposited in only three to five seconds. In a specific application, 13 pounds of nickel was deposited in less than an hour to furnish a 1/32-inch coat-

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BONUS FEATURES COMMON TO ALL CLAIR SURFACE FINISHING MACHINES

- ☐ Easier to exhaust and keep clean!
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- ☐ Choice of 8 highly specialized models, to meet YOUR specific requirements!

Write for details on the new 300-Series Clair Finishing Machines.

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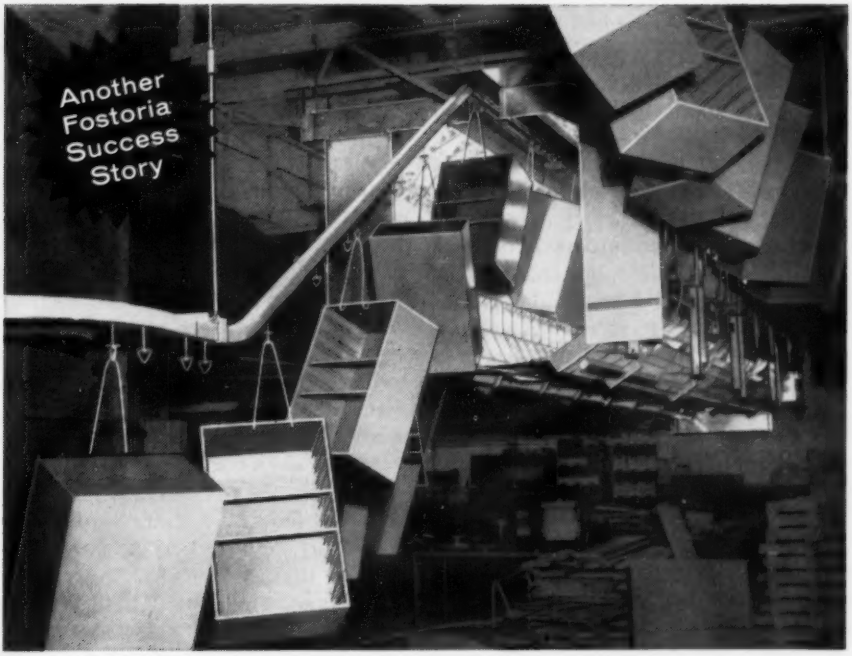

12½-minute baking cycle overhead speeds production below

Far-sighted planning by The Wright Line, Inc., prevented costly production line bottlenecks in their new one-story plant in Worcester, Mass. By suspending compact Fostoria Radiant Ovens ceiling-high . . . drying the "fine-wrinkle" finish on their metal card-handling cabinets is accomplished in 12½ minutes through controlled 365° F. radiant heat—and without interrupting the continuous flow of products at floor level!

Painted units are conveyed from spray booths upwards through 5' x 6' tunnel openings in their two 28½-foot Fostoria infrared ovens, for a fast, uniform baking-out operation. Valuable floor space is saved, production moves smoothly, and a better finish is assured at lower cost through efficient Fostoria radiant heat.

Consulting your Fostoria sales engineer can bring out some important cost-saving solutions to your finishing problems . . . heating, degreasing, baking, drying. He'll give you the facts on Fostoria radiant equipment — infrared lamp, quartz lamp or radiant rod—that will do the most work for you at lowest cost. 5513A

Write for free 20-page book, "Radiant Heat—applications unlimited"

INFRA-RED fostoria SYSTEM

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ing on a mold facing of about 30 inches diameter.

Deposition onto non-conductors is as simple as onto metals. Paper, wood, textiles, plastics, plaster, glass, and ceramic materials have all been coated without difficulty. In one large pilot-plant installation, glass fiber was continuously coated with a uniform thickness of nickel, at speeds in excess of 100 feet per minute.

Gas plating has a particular advantage in the plating of porous parts such as powdered metal objects. Liquid plating solutions penetrate such articles unless special sealing measures are used, and can cause defects later on. This is not a factor with gas plating; furthermore, deposits from the vapor phase may even penetrate the surface pores and improve the part's overall properties.

Good quality deposits from the gas plating process can be produced. Adhesion to the base metal is excellent; a true chemical bond is formed in many metal combinations, and where a chemical union is not possible the mechanical bond is nevertheless very firm. Tough deposits can be formed, and a considerable range in hardness and ductility can be accomplished by controlling the plating variables. Thick deposits, up to ½ inch, have been produced without cracking or peeling; and the gas plating process has been used to form metal objects on a shape that is subsequently removed by dissolving in acid or by other means.

Disposal of wastes cannot be over-

STOP COSTLY HAND WORK!
SPEED THE TOUGH JOBS with Easy DUAL-ACTION
TWO SANDERS IN ONE
Easy
Model DA Air.
Does All The Job For Metal Fabricators
Removing scratches, grinder file and tool marks, smoothing, blending solder, high-lighting, sanding surfacer, polishing, honing.
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The finest lighting fixtures manufactured by the Lighting and Lamp Industry are finished with Nikolas Quality Finishes.

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Rejects because of finishing material failure cost money —and customers.

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looked for gas plating, but it is a less complex problem than the disposal of liquid wastes. Most of the spent gas can be recovered and recycled. The decomposition of nickel carbonyl, for example, produces a deposit of nickel metal and the waste product carbon monoxide.

Carbon monoxide is a raw material for the preparation of nickel carbonyl, and so can be returned to the process. Some waste gas is produced, of course, by leakage into or out of the gas lock cells. This waste gas requires careful handling, because of its toxic nature, but it is a simple step to pass it through a combustion unit which renders it totally harmless and suitable for free discharge into the air.

Hydrogen embrittlement does not occur in the gas plating process, because hydrogen is not used or formed.

It is possible to plate alloys from mixtures of metal gas compounds. In fact, certain alloys that cannot be deposited electrolytically can be obtained by this means. Such materials as stainless steel, tungsten carbide, and other carbides and silicides, can be formed by deposition from the gas phase, and the preparation of refractory layers may become a major application of this process.

Aircon

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Standard or Custom Designed to suit your needs

MODEL "75"

Recently added to our line of vapor degreasers is the new Aircon Model 75, suitable for both large and small plants where an economical, permanent installation is desired, either for continual operation or as needed. This unit fills the gap between smaller, portable vapor degreasers and the larger higher capacity degreasers.

A working area 24" wide x 40" long x 24" high, combined with a fast cleaning cycle permits a load capacity in excess of 750 lbs. of steel per hour. The Model 75 is equipped with a water control safety valve which prohibits operation of the machine if the water supply is inadequate. Lists at $625 FOB, complete with motor pump and spray equipment.

Write today for information on the Aircon Vapor Degreaser to fit your requirements. We are designers and engineers of special degreasing equipment. Consult us on your degreasing problems.

Armstrong & White

CHESWICK, PENNSYLVANIA

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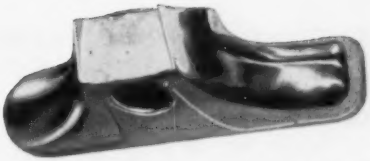
HOW WOULD YOU
SOLVE IT?



PRODUCTION PROBLEM: To cut unit costs and increase production of grinding off parting lines and other imperfections, and polishing die-cast aluminum vacuum cleaner nozzles prior to plating. Scott and Fetzer Co., makers of famous Kirby vacuum cleaners, were using set-up wheels in a three-grit sequence – #60, #120, #220 – to do this operation. Production was 6 finished units per hour.

SOLUTION: A 3M Representative suggested that this Cleveland, Ohio manufacturer switch to the 3M Method using Three-M-ite Cloth Belts, Grits #120 and #220. This method increased production 116% – from 6 to 13 finished nozzles per hour – *and* eliminated one grinding operation! Too, the finer polished surface obtained with 3M Belts made for far superior final plating.

A 3M Representative can help solve *your* grinding and finishing problems, too. His services are available without cost or obligation. Call him today!

Write Minnesota Mining and Mfg. Co., Dept FH-126, St. Paul 6, Minn., for FREE copy of booklet *"Case History Reports on 3M Abrasive Belts."*

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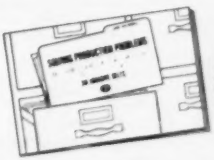

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Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ontario. Export Sales Office: 99 Park Avenue, New York City. Makers of "Scotch" Brand Pressure-Sensitive Tapes, "Scotch" Brand Magnetic Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing.

3M COMPANY

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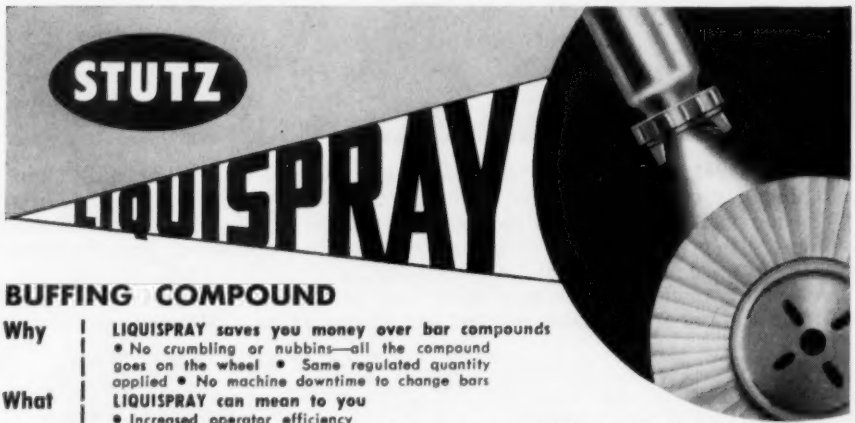
Disadvantages of Gas Plating

The principal drawback of gas plating as a commercial process at the present time is its expense. Gaseous compounds of the metals are not cheap. Chromium hexacarbonyl, $Cr(CO)_6$, which would be a suitable raw material for chromium plating, costs about 100 dollars per pound. However, the metals currently in production-scale gas plating are far less expensive than this, and most of the materials will require only increased usage to bring their price down to a reasonable figure. Nickel carbonyl, for instance, is 72 cents per pound; aluminum alkyls may be obtained for as little as 25 cents per lb.

It is difficult to estimate investment costs for a commercial production unit, since there can be so much variation in the applications and requirements. Gas plating techniques are well enough established at the present time, however, that a few months of development work should produce design information for most new applications. Cost of the commercial installation might be as little as 60,000 dollars, according to a recent estimate based on existing units.

A second disadvantage of the gas plating operation is the toxic nature of the materials used. This fact deterred research workers for many years. Control of hazard from toxicity is, however, purely a matter of good engineering of the installation. Commonwealth Engineering Company has devoted much thought to this phase of the process, and the



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Why — **LIQUISPRAY saves you money over bar compounds**
- No crumbling or nubbins—all the compound goes on the wheel
- Same regulated quantity applied
- No machine downtime to change bars

What — **LIQUISPRAY can mean to you**
- Increased operator efficiency
- More uniform finish and fewer rejects
- Compound costs cut up to 50%
- Tremendous increase in buff life

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WHY you should use LIQUISPRAY
- Abrasives will not settle
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LIQUISPRAY is the best... We invite your inquiry specifying your particular requirements. Samples available.

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zinc phosphate rust-protection

Welcome to America, VOLVO! You're a sensation abroad . . . you're becoming the most popular family sports car here! And American buyers can buy the three great VOLVO models* with confidence that all painted metal is well protected against rusting and paint-peeling with Pennsalt's famous FOSBOND zinc phosphate coating.

VOLVO is another quality name in the automotive field being protected by Pennsalt FOSBOND. More and more metal-products manufacturers are turning to Pennsalt know-how to obtain a better start for *their* finish—from cleaning, through surface-activation, to the ultimate in phosphate protection.

WANT TO KNOW MORE about how FOSBOND and Pennsalt's long experience in metal working chemistry can help you improve *your* finish and reduce your costs? Just call the Pennsalt man, or write Metal Processing Dept. 376, Pennsylvania Salt Manufacturing Company. East: Three Penn Center Plaza, Philadelphia 2, Pa.; West: 2020 Milvia Street, Berkeley 4, Calif. In Canada: Pennsalt Chemicals of Canada, Hamilton, Ontario.

*VOLVO PV444 Sedan, VOLVO "Duet" Station Wagon, VOLVO Sports Car

Pennsalt Chemicals

METAL CLEANERS • PHOSPHATE COATINGS
COLD-WORKING LUBRICANTS

A BETTER START FOR YOUR FINISH

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hazard has been largely eliminated by their designs. The metal finishing industry is accustomed to dealing with cyanides and other toxic substances, and cases of injury are extremely rare. The gas plating materials are no more dangerous, and should be even easier to guard against by proper equipment design.

Metal Carbonyl Compounds

Nickel is the most common metal utilized in the gas plating operation. It is deposited from the compound $Ni(CO)_4$, nickel carbonyl, a liquid that boils at 115 deg. F. The vapor decomposes and deposits nickel metal at about 260 deg. F.

Iron can be deposited from the pentacarbonyl compound, $Fe(CO)_5$. This is also a liquid, boiling at 216 deg. F., and decomposing at 300 deg. F. Other iron carbonyls include $Fe(CO)_4$ and $Fe(CO)_9$, but the pentacompound is most useful.

Chromium carbonyl, $Cr(CO)_6$, is a crystalline solid, which vaporizes and decomposes simultaneously at about 300 deg. F. By use of a carrier gas, however, or by operating under partial vacuum, a workable gaseous concentration of $CR(CO)_6$ can be produced below the decomposition temperature.

Metal Parts Washers—Phosphatizing Units —Hydra-Spray Pickling Equipment

Metal parts are cleaned and processed by means of pressure sprays which converge on the parts from all angles. Solutions are heated to required temperatures by gas, oil or steam immersion heaters. Spray solutions remove foreign matter and perform metal treatment as required.

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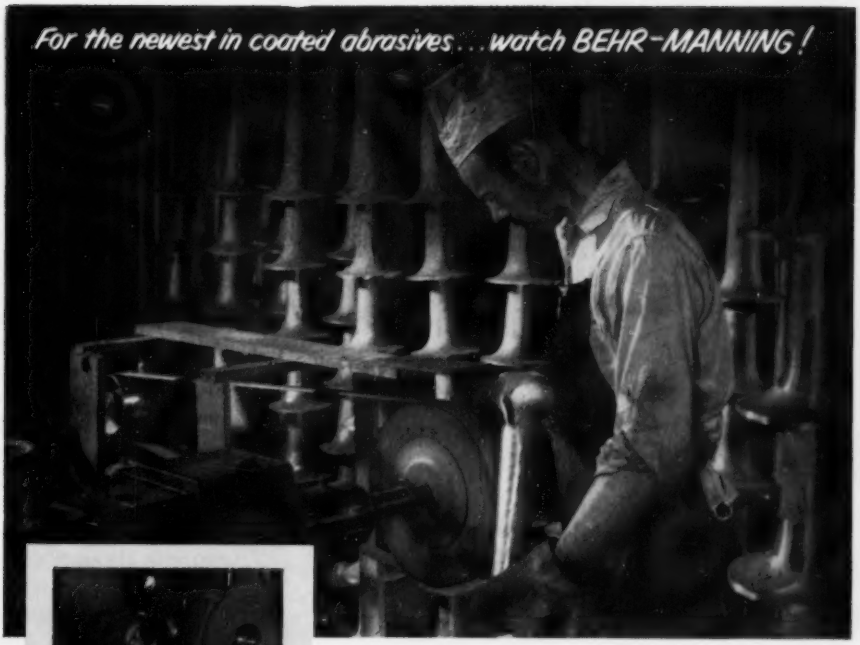

A natural for polishing intricately shaped casting surfaces.

A favorite for dry fining and blending plumbing parts.

Tops for removing flash from difficult inside contours.

Smoothing-the-way to faster, better casting finishes

BEHR-MANNING Coated Abrasive Belts, smooth cutting and long-lasting, have proven a versatile, highly productive tool in foundries all over the country. For example, grinding mold seams and flash from these aluminum pedestal bases (above) is accomplished at record breaking speeds.

Test a BEHR-MANNING Coated Abrasive Belt on your next grinding, polishing or finishing operation. A BEHR-MANNING Field Engineer will gladly demonstrate the advantages of belts, in your foundry or at a nearby BEHR-MANNING Application Room. Call him today or write Behr-Manning, Troy, N. Y., Dept. PF-12.

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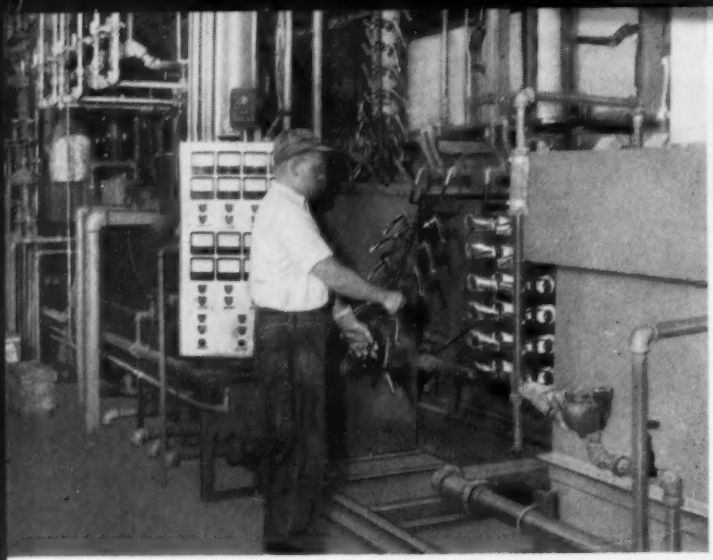

CUT YOUR PLATING TIME WITH THESE UDYLITE PROCESSES

HI-C Processes Give Faster Nickel Plate on Die Cast or Steel Parts

In plating some 5000 die cast and steel parts per hour, Rival Manufacturing Company of Kansas City, Missouri, use Udylite 514 HI-C and 31 HI-C bright nickel processes in combination with two Udylite Full Automatic Plating Machines.

The HI-C (high chloride) baths give faster bright nickel plate than any processes ever developed and at the same time brighter, more ductile and smoother nickel finishes. They are developments of the Udylite Research Corporation and are the only bright high chloride baths available commercially.

The HI-C processes plate nickel perfectly over copper for die cast parts and provide the important underlay for the final chrome plated finish. They are also used by Rival as the basic coating on steel before the chrome is applied.

As every electroplater knows, where the cycles of copper, nickel and chrome plating are used, nickel plating is the most time consuming. Therefore, Udylite's development of HI-C for speeding up the nickel cycle is of prime importance.

The use of Udylite Full Automatics by Rival has greatly increased efficiency and economy. Only one man is required to inspect the parts and operate each machine. Now there is complete coordination between fabricating, finishing and assembly. HI-C processes and the controlled time cycle of plating have improved the quality of finish and greatly reduced rejects.

A Udylite HI-C nickel process and a Udylite Automatic Plating Machine will save time, money and improve your product. Let us tell you how. Write us today.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

Molybdenum carbonyl $Mo(CO)_6$, is a solid. Its vaporization and decomposition temperatures are about the same as those of chromium carbonyl, and it can be handled in the same manner.

Tungsten carbonyl, $W(CO)_6$, is also a solid. Its vapor pressure at room temperature is about 0.01 mm. Hg, but at 216 deg. F. it reaches 15.5 mm., which is high enough for use in the presence of a carrier gas. The decomposition temperature is about 300 deg. Fahrenheit.

Cobalt carbonyl is a black or orange solid, of compositions $Co(CO)_3$ and $Co(CO)_4$, respectively. Less stable than the previously listed compounds, decomposing at 125 deg. F., just above the melting point.

Ruthenium also exists in two types of carbonyl compound, $Ru(CO)_5$ and $Ru_2(CO)_9$, both solids. They decompose at 400 deg. F. in the absence of air.

Iridium, osmium, rhodium and *rhenium* carbonyls have also been prepared, but are less well known than the other metals listed.

For more data circle 179 on Reader Service Card

Other Gaesous Metal Compounds

Under favorable conditions, it is possible to deposit metals by decomposition of their hydride or hydrogen compounds. Hydrides of many metals are known, and have been reported in the literature, but their development for gas-plating is not yet well advanced. The hydrides of silicon and of boron look particularly interesting but they have not yet been fully developed.

Metal halides, in some cases, are also suitable raw materials for gas plating. Uranium hexafluoride, UF_6, for example, can be used to deposit uranium metal on a heated surface. The halide compounds are usually carbureted with hydrogen gas, which is essential in the decomposition step to provide a reducing action. A silicon tetrachloride-hydrogen atmosphere has been used to siliconize the surface of iron objects for improved corrosion resistance; and molybdenum articles are being coated with molybdenum disilicide by a similar treatment. As an alternate to the use of hydrogen, the ob-

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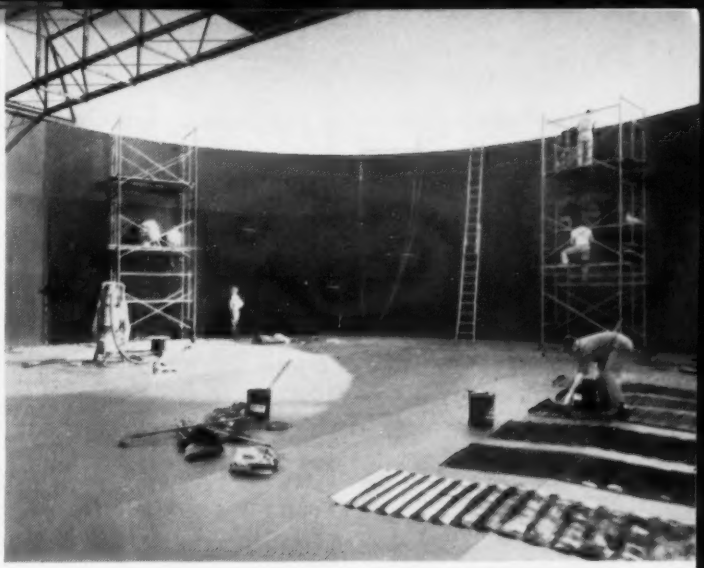

UDYLITE KOROSEAL* LINING

Answers The Waste Disposal Problem

Protection of the steel and concrete tanks from the corrosion of acids in waste disposal is a problem which must be answered with safety and permanence.

Koroseal* installed by Udylite is the answer because it is impervious to the attacks of acid and Udylite methods of application and welding techniques insure continuity of protection.

Here are tanks, eleven steel and four concrete, as large as the one pictured above—68 feet in diameter and 20 feet high. Udylite men of experience in Koroseal* lining work of all kinds are working to beat the weather man to complete this installation. Over 40,000 square feet of Koroseal* are being used to line these tanks.

Almost fifteen years of experience stand Udylite in good stead in Koroseal* lining in the factory or out in the field. Udylite developed the patented welding torch which welds each seam of the lining and assures the finest and tightest tank linings available. Special cements and special methods of applying the cements have improved the quality of tank linings—experience gained by many years of lining tanks in volume.

For tank linings of any kind—regardless of size or location—it will pay you to consult Udylite. Write us today.

*Product of B. F. Goodrich Company

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

ject may be pre-coated, by vacuum sputtering or other means, with a strongly reducing coating such as magnesium, aluminum, or calcium.

Metal organic compounds also have a positive future in gas plating. With the exception of lead tetraethyl, $Pb(C_2H_5)_4$, well known as a gasoline additive, not enough information is available on these materials. They have many interesting possibilities, not only for metal deposition but in many other fields, so their development is only a matter of time and continued interest.

Conclusion

Gas plating is not expected to compete directly with conventional electroplating, but will find application where its particular features are advantageous. It is probably too expensive and too specialized for the job shop, but is being adopted by large manufacturers for specific tasks. It is hoped that research will continue to be active, as the entire process shows much promise. Less expensive raw materials will probably result normally as use of the process becomes more widespread.

★ ★ ★

For more data on any product mentioned in this issue, use **Reader Service Cards** inside front cover.

The abbot and the Bishop's Candlesticks

The Bishop was upset. How could he possibly have 500 dull, tarnished brass candlesticks polished and gleaming in time for tomorrow's special candlelight services?

The *abbot* was quite calm. He *knew* the answer to the Bishop's dilemma and in less than twenty-four hours, he returned from his laboratory with the candlesticks – bright and glistening.

How did he do it?

Articles made of brass and other metals may be readily burnished and tumbled with Abbott Burnishing Materials. Made in six scientifically designed shapes, Abbott Burnishing Materials make efficient and uniform contact on metal parts and castings of every conceivable size and shape. Economical to use, they are *deep hardened* and have a mirrorlike glass-hard surface for extra long life. Combined with the Abbott Vertical Tumbling Barrel, they make the perfect barrel finishing combination.

Just off the press! Newest Abbott catalog of tumbling barrels and tumbling media. Write for it!

ABBOTT

The ABBOTT BALL Company

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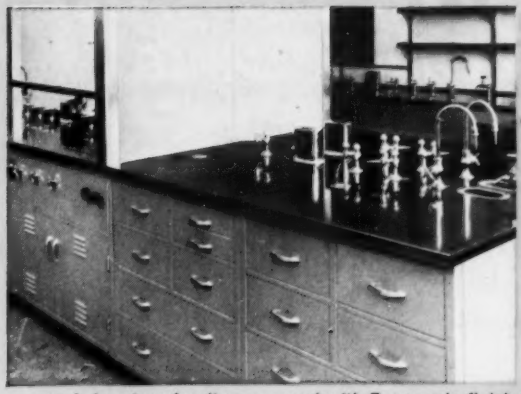

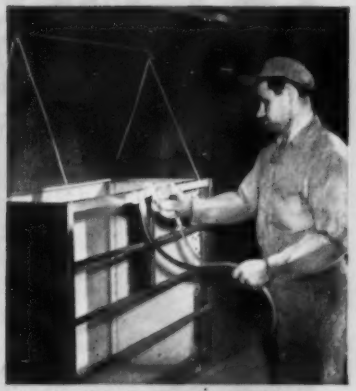

Laboratory furniture sprayed with Epon resin finish supplied by Glidden Co., Cleveland, and Egyptian Lacquer Mfg. Co., South Kearny, N. J., and Lafayette, Ind.

Browne-Morse Co. found a tough, chemical-resistant coating for laboratory furniture...

HERE'S HOW...

LABORATORY FURNITURE leads a rough life. It requires a coating that withstands hard knocks and chemical attack.

To find such a coating Browne-Morse of Muskegon, Michigan, tested various formulations by applying them to steel panels, which were then exposed to corrosive laboratory chemicals. Performance was evaluated by the time required for any break-through, softening, or change in color or appearance.

Only those coating formulations based on Epon resin passed these tough tests satisfactorily. They combined excellent chemical resistance with outstanding adhesion to steel and aluminum. The Epon resin coatings resisted scuffing and impact and didn't crack or spall—even when severely dented. Epon resin coatings are now standard for all Browne-Morse laboratory furniture.

Are you aware of the advantages of Epon resin? Do you want excellent adhesion, resistance to abrasion and impact, ability to withstand extremes of heat, humidity, and the attack of corrosive chemicals?

If *you* need a long-lasting, dependable surface coating that can withstand the extremes of heat, humidity, corrosive atmosphere and rough handling . . . ask for Epon resin-based coatings. You can call on our sales offices for names of suppliers. Write for the new brochure, "Planning to Paint a Pyramid?"

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FOR HIGH PRODUCTION at LOW COST on

POLISHING and BUFFING • DE-BURRING
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• Proved performance and dependability in industry for half a century

RECOMMENDATIONS and QUOTATIONS

• *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

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keep spray-booths clean with

"LIQUID ENVELOPE"

original, firesafe strip-coating

Spray it on. At clean-up time, strip it off, respray and you're back in production quickly. "LIQUID ENVELOPE" improves illumination, promotes fire-safety. Dry film will not burn or support combustion.

New Users: Order 5-gal. test-sample at drum price from your dealer.

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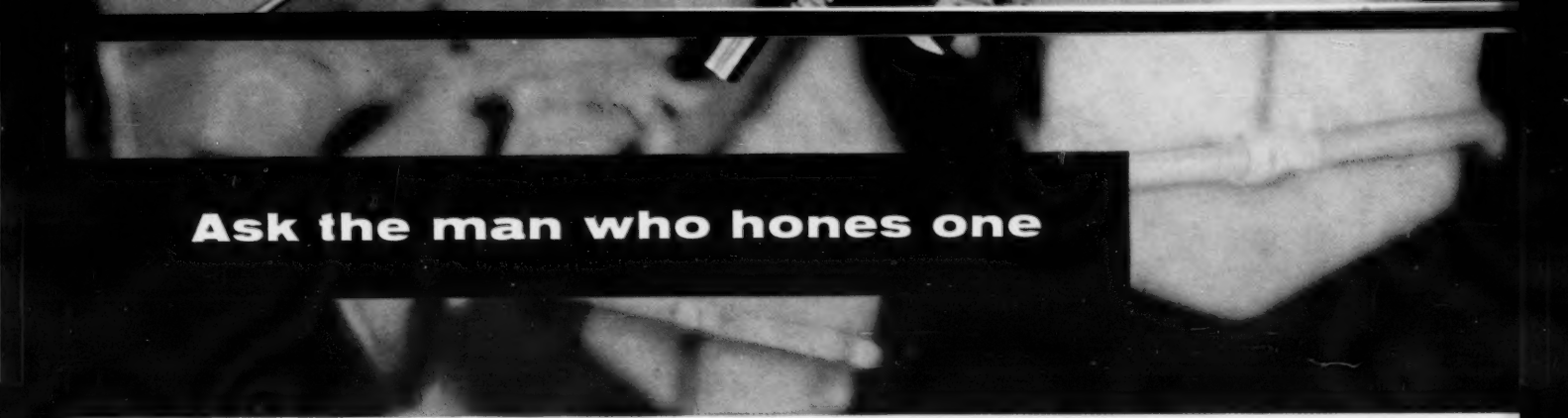

Ask the man who hones one

Want finer, more uniform finishes on intricate metal parts like these, at less abrasive cost? Standardize on Tumbling Grains by CARBORUNDUM in your barrel finishing operations. Each particle—of fused aluminum oxide—is tough and blocky. Used in modern precision tumbling machines, they produce a continuous honing action that combines rapid stock removal with the generation of ultra-fine finishes. CARBORUNDUM's Tumbling Grains are designed for both wet and dry operations, on metal parts of almost any size or shape. These Tumbling Grains come in a wide variety of sizes. They are sometimes used as an additive to other tumbling media. Get all the facts from your CARBORUNDUM Distributor or salesman. Or write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

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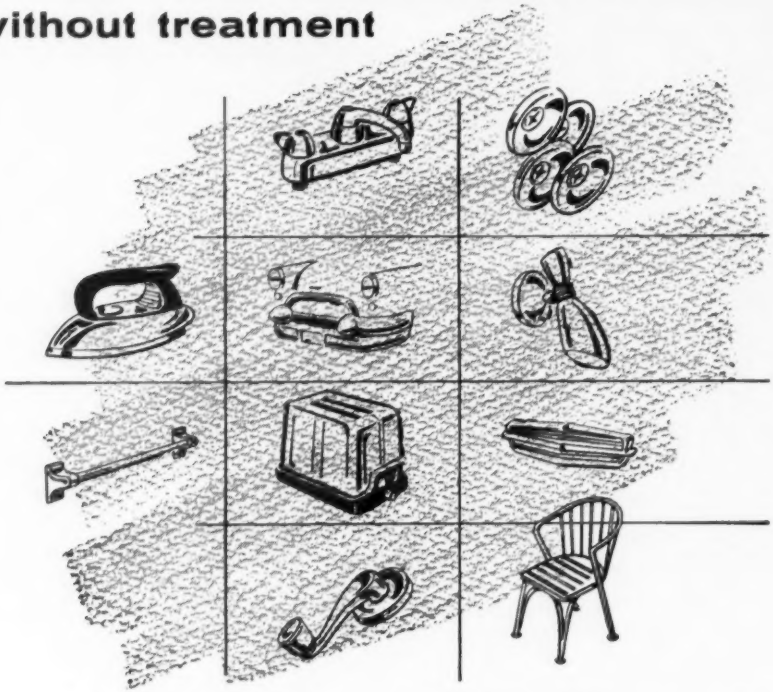
HARSHAW Nubrite

Long, bright nickel plating operation without treatment



Other outstanding advantages are:

BRIGHT OVER WIDE RANGE
from a few amperes/ft.²
to well over 100 amperes/ft.²

HIGH TOLERANCE to common impurities

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EXCELLENT LEVELING

BETTER BRIGHTNESS with thinner deposits.

SIMPLE OPERATION and CONTROL
Plates brightly from 120°F to 155°F.
pH can vary over a wide range.
Liquid addition agents.

REMAINS DUCTILE AFTER LONG OPERATION

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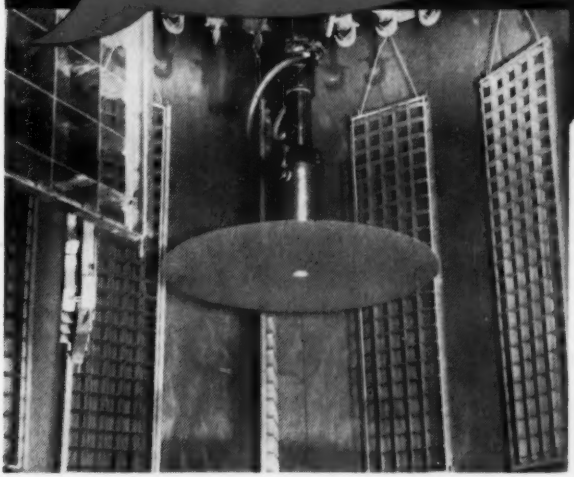
What d'ya mean . . .

You're too little to use RANSBURG Electrostatic Spray Painting?

If your production justifies conveyorized painting, chances are RANSBURG NO. 2 PROCESS can do YOUR painting job better . . . at less cost.



RANSBURG NO. 2 PROCESS *accounts for a 50% savings in paint costs in finishing fluorescent lighting fixture parts for* MELROSE LIGHTING COMPANY, *Philadelphia. Melrose is a small plant employing only 25 people.*

Not only big industrial manufacturers like G. E. . . . Whirlpool-Seeger . . . Westinghouse and Republic Steel, but little plants, too, are using RANSBURG NO. 2 PROCESS in their finishing departments to help keep mounting manufacturing costs in line.

A typical example is Melrose Lighting Company, Philadelphia. They make industrial fluorescent lighting fixtures and employ only 25 people.

Formerly, according to F. Homer Hagaman, owner Melrose Lighting, when their fixture louvres were hand sprayed, they painted only 70 pieces per hour. Now, with Ransburg Electro-Spray, he reports they get over 200 per hour.

Production on the fixture end parts jumped from 400 pieces per hour by hand spray to over 2000 an hour electrostatically—a 400% increase!

Along with improving quality of the work, stepping up production, and cutting labor costs, Melrose is enjoying a 50% paint savings.

Let us show you how Ransburg No. 2 Process can lower YOUR painting costs. Write for our new No. 2 Process brochure on electrostatic spray painting. Numerous production-line examples show how other manufacturers are cutting finishing costs . . . increasing production . . . and improving the uniformity and quality of their work with Ransburg equipment.

Ransburg **ELECTRO-COATING CORP.**

Indianapolis 7, Indiana

RANSBURG

For more data circle **187** on Reader Service Card

Page 66

Practical Applications of Modern Products

Plastic Protects Temperature Controller

A plastic coating process has been developed by Powers Regulator Co. to protect the thermal element of its No. 11-MF temperature regulator from a wide variety of corrosives encountered in metal finishing. The coating is said to give satisfactory protection to the regulator, which is widely used in plating, anodizing, phosphatizing, cleaning and pickling installations for maintaining constant temperatures in processing solutions.

Measuring 0.0050 inch thick, the coating can be used in solutions ranging from 0 to 13 pH, at temperatures up to 205 deg. F. The coating does not

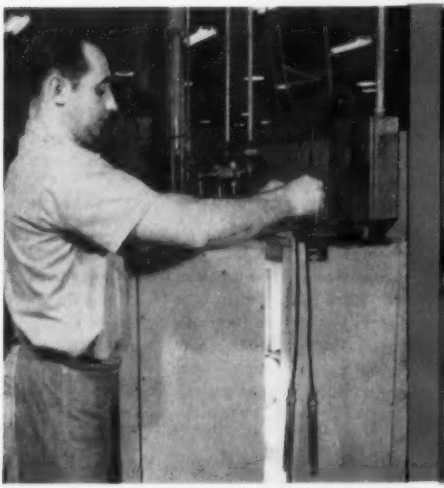


Fig. 1—Before being coated with plastic, thermal bulbs for Powers No. 11-MF temperature regulators are heated to a predetermined temperature by 32 infrared bulbs.

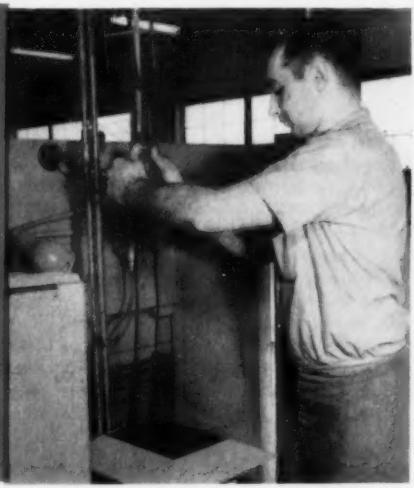


Fig. 2—Preheated bulbs are dipped into plastic coating material for 15 seconds. They are then drained for 15-20 seconds. Water jacket keeps tank's contents at 75-80 deg. F.

significantly affect the response of the instrument, it is stated.

Powers uses infrared pre-heating and curing to attain the best film properties. High-voltage testing is employed to assure that the plastic film is continuous.

In the coating process, the thermal element (bulb and capillary) of the regulator is first raised to a predetermined temperature (Fig. 1) by exposure to 32 250-watt infrared bulbs for 15 minutes to ½ hour.

The parts are then given a 15-second dip in the plastic (Fig. 2), which is held at 75-80 deg. F., then drained for 15-20 seconds. The coating is applied right up to the head of the regulator. **After this, the coated parts** are suspended and rotated on a carrier for 8 minutes in an infrared oven (Fig. 3). The oven is 3 feet long, 3 feet wide, and 4 feet high, and is equipped with 32 250-watt infrared bulbs. Oven air is changed twice every minute.

Fig. 4—Cooled, coated element is shown being tested by immersion in water and application of a 6000-volt potential difference to spot pin holes or breaks in the coating.

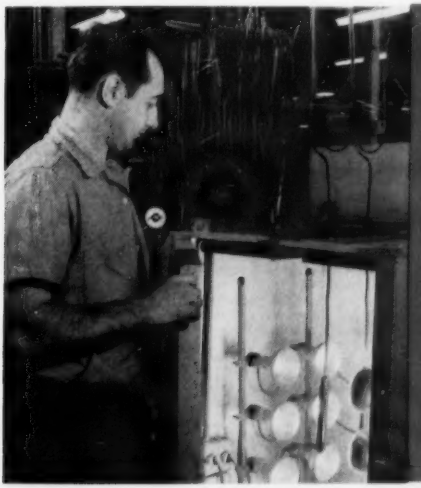


Fig. 3—Coated bulbs are cured for eight minutes by heat from infrared lamps. Bulbs are rotated by a motorized apparatus while in the cabinet, so as to cure coating evenly.

Fig. 5—Charles Priesmeyer, the Powers engineer who developed coating process, examines finished and unfinished thermal bulbs. (Photos courtesy Powers Regulator Co.)

Practical Applications . . .

When cooled, the coated element is placed in water containing a wetting agent. One leg of an a.c. circuit is attached to the liquid, the other to the exposed metallic portion of the coated element. A potential difference of 6,000 volts is applied to make sure the coating is continuous (Fig. 4), without pin holes or other breaks.

The No. 11-MF regulator, a self-operating control, is used to maintain the temperature of metal finishing solutions. In use, the bulb (Fig. 5) is placed in a tank where temperature is to be controlled, while the diaphragm-type bellows valve is placed in the pipe line supplying the heating medium. **A temperature change varies** the pressure in the bulb. This pressure is transmitted through the capillary tubing to the bellows, which operates a valve to increase or decrease the flow of heating medium. Thus the process is held at a constant temperature.

For more data circle **1** on Reader Service Card

★ ★ ★

Steam Cleaning Eases Plating Plant Maintenance

Cleaning and maintenance of production equipment are highly important tasks in all plants. When the cleaning operation is particularly difficult, as it is in plating plants and in the plating departments of general manufacturing firms, better cleaning methods can often improve production and profit.

Companies engaged in plating face several cleaning jobs that, in the past, meant time-consuming hand work—scraping, brushing, and wiping. Alka-

Another **fine** product made **finer** . . .

with the PARAMOUNT "Finishing Touch"

"We find Paramount Felt Wheels best for our ticklish finishing problems," says J. Gaspari and Co., Inc., renowned makers of eyeglass frames. "The samples (illustrated) are a good example. Thanks to the controlled finishing your wheels allow, we are able to remove high solder spots on the frame and temple which must be lapped smooth without damaging the gold shell. We also use your wheels to finish the aluminum plaques because they cut and smooth in *one operation.*"

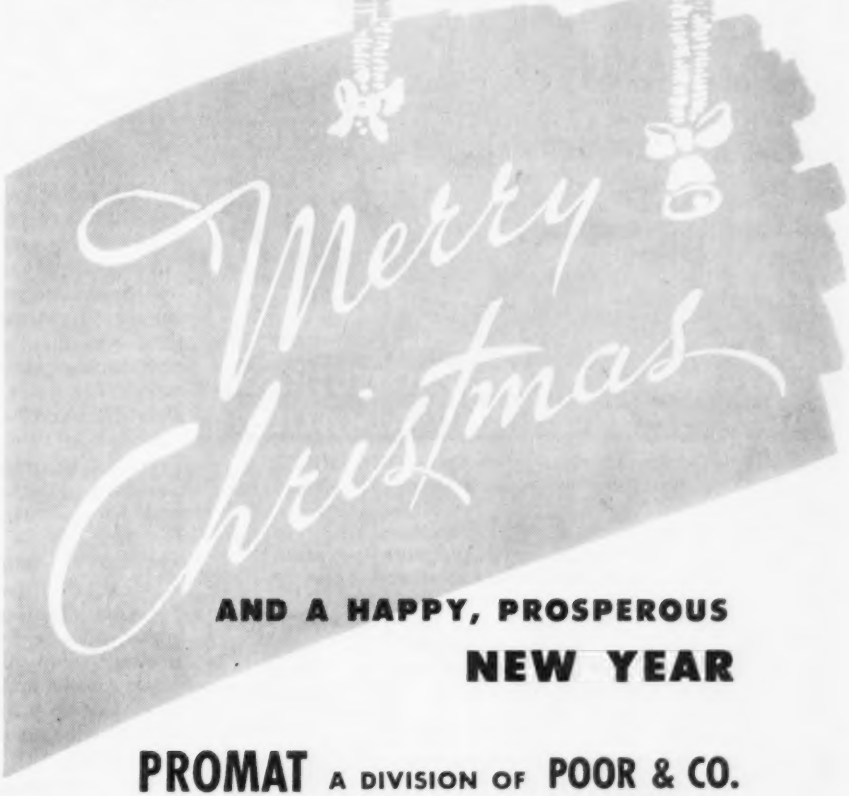
From heavy castings to delicate jewelry, whatever *your* product, Paramount Felt Wheels can save you time and money. Call your supply house today.

Paramount
Felt Wheels,
Bobs, Sheet Felt

Bacon Felt Co. 447 West Water St., Taunton, Mass.

For more data circle **188** on Reader Service Card

At the close of another year we realize how important your friendship and good-will have been to our success. We appreciate this opportunity to express our gratitude and wish you a very



AND A HAPPY, PROSPEROUS NEW YEAR

PROMAT A DIVISION OF **POOR & CO.**

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"PROMAT MEANS PROTECTIVE MATERIALS"

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line cleaning tanks, plating tanks, polishing and buffing machinery, and other equipment all had to be cleaned by hand.

At Academy Plating Company, Newark, N. J., an especially difficult job was periodic cleaning of the polishing and buffing machines. Polishing paste and fiber from polishing brushes formed a mixture that coated and clogged the machines and had to be removed every few months.

Doing so—by hand—was no easy job. Maintenance men had to soak the paste-and-fiber mixture with kerosene, then scrape it out with hand scrapers. Cleaning one machine took a man a couple of hours of dirty, unpleasant work. That added up to quite a few man-hours for the number of machines that had to be cleaned.

So Academy Plating turned to steam cleaning. Its portable Speedylectric Steam-jet Cleaner, made by Pantex Manufacturing Corp., now cleans each polishing and buffing machine quickly without using kerosene. No disassembly of machines is necessary, as the steam gets into all the crevices that were so difficult to clean by hand.

Another job, faced by both Academy Plating and Ideal Corp., Brooklyn, N. Y., was the cleaning of alkaline cleaning and plating tanks. Academy Plating cleans all plating tanks with steam once a year during the vacation period.

This company has found its Speedylectric cleaner especially useful for

COROCRETE

CORROSION-PROOF FLOOR SURFACING

PROVIDES GREATER PROTECTION AGAINST ACIDS AND ALKALIES

We will send you a sample to prove that COROCRETE will give you greater protection . . . save you dollars . . . and last longer.

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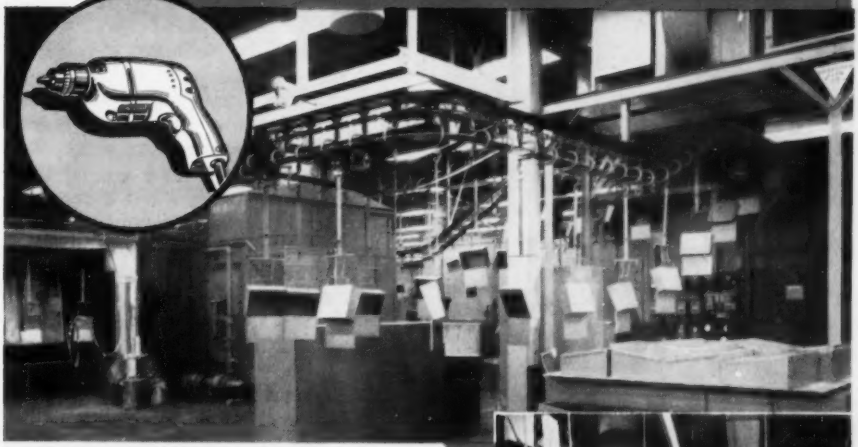
BLACK & DECKER IMPROVES FINISHING PRODUCTION



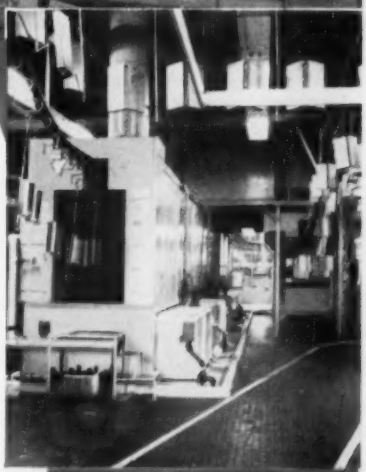
with DESPATCH System

Higher production schedules for finishing power tool parts and accessories was the objective of this internationally known manufacturer. By utilizing all space on the floor and above the floor for material transporting and processing, production capacity was doubled in the finish department.

Designers • Builders • Installers

Despatch engineers will help from the first to last stages to provide the finishing system that you need to be competitive. We can tell you of hundreds of plants in every area that have proven the competence of Despatch technicians and the benefits that Despatch engineered finishing systems have provided their production.

For more information on how we can serve your plant, write **Dept. C**



Top View: Spray booth adjoining an arrangement of over-hung finish baking ovens with feeder conveyor line.

Bottom View: Multi-stage washer and dry-off oven, conveyor supplies completely treated parts to spray booth.

DESPATCH OVEN COMPANY

Minneapolis Office: 619 S. E. 8th St.
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PIONEERS IN ENGINEERING HEAT APPLICATIONS FOR INDUSTRY

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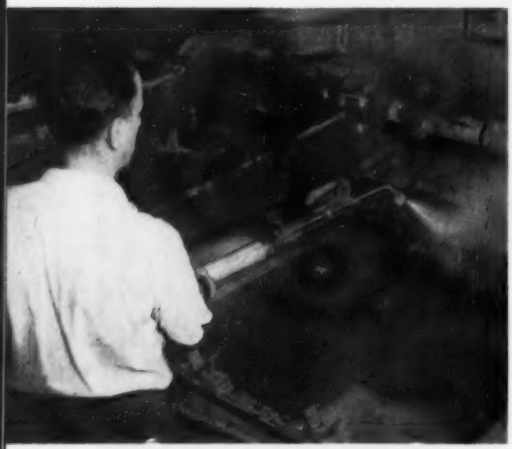


Fig. 1—Steam cleaning is especially useful for cleaning alkaline cleaning and plating tanks.

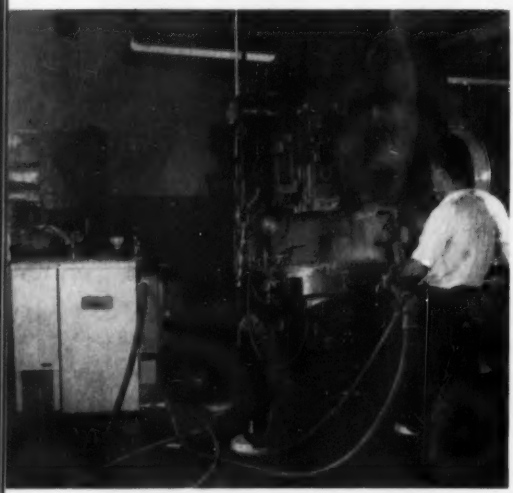


Fig. 2—Steam cleaning is handy for punch presses, too. Presses can be cleaned right on the production floor during working hours. Detergent and steam remove all dirt, grease, oil. (Photographs courtesy Pantex Mfg. Corp.)

cleaning the alkaline cleaning tanks in its plating line. These tanks sludge up rapidly and were formerly cleaned by brush and scraper every two weeks. Now sludge is removed by a heavy-duty wet-and-dry vacuum cleaner instead of being shoveled out by hand. Vacuuming is cleaner than shoveling; the vacuum cleaner also mops up any remaining jet-cleaner solution.

These companies are using their steam-jet cleaners for other duties too: cleaning oil and grease from die-casting machines before painting and cleaning concrete floors before construction or remodeling.

Ideal uses the steam-jet cleaner for cleaning a variety of other equipment —punch presses, riveting machines and pneumatic screw drivers. Punch presses are cleaned on the production floor during working hours if adjacent presses are not in use.

Steam does such a thorough cleaning job, Ideal has found, that the concentration of the detergent must be kept fairly low. Too high a concentration will remove not only the dirt, grease, and oil but paint as well. Adjusting detergent concentration to manufacturers' recommendations provides an efficient, but not too harsh, cleaning operation.

Both companies have found that operation of their steam cleaners costs little in power consumption.

For more data circle **2** on Reader Service Card

★ ★ ★

Portable Instrument Checks Surface Finish

A portable surface finish checking instrument called the Surfindicator is being used in a variety of on-the-spot surface finish measuring jobs. Checking to see that surface finish meets specifications before leaving the finishing department can save time and raise efficiency in two ways: elim-

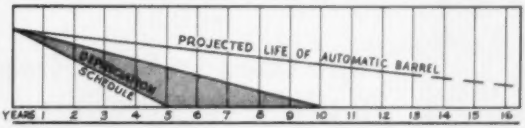
A HOT IDEA FOR COOL PROFITS

THE FINISHING TOUCH

by A. B. HOEFER
Vice-President
FREDERIC B. STEVENS, INC.

Stevens Automatic Plating Barrels Adaptable to Any Situation

IT'S GOOD TO KNOW WHEN YOU ARE INVESTING in a plating machine that Stevens units can be designed so that more than one type of plating can be done on one machine. Also, that changes can be made in the future to meet any specifications you may have. We've changed over a good number of Stevens machines in our time. That's why there are so many Stevens machines in use far beyond their depreciation schedule.



THERE ARE MANY OTHER SAVINGS you can enjoy beyond long life. Stevens Automatic Barrel machines require only one employee to operate the machine. These units are completely automatic, because the open end barrel is loaded in a vertical mouth-upward position and automatically unloaded by tilting the barrel downward. There are no lids to fasten or unfasten.

POSSIBLE MIXING OF PARTS IS ELIMINATED in the Stevens automatic barrel. Small, special loads can be conveniently run without penalizing the productive capacity of the machine and without the inconvenience of partitioned cylinders. Stevens Automatic Barrel Machines are used for varied processes that include copper strike; copper, nickel, tin, brass, zinc and cadmium plating; phosphating; alrocing; dichromating; cleaning and bright dipping.

THE SIMPLE COMPACT DESIGN of this machine permits production capacities as high as 4,000 pounds per hour. Simplicity of design makes it equally practical to distribute the capacity between two or more machines to provide flexibility in plating thicknesses and production.

Let us give you more details on Stevens Automatic Barrels. Write us today, Frederic B. Stevens, Inc., 1814 Eighteenth Street, Detroit 16, Michigan.

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YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

METAL FINISHING EQUIPMENT AND SUPPLIES FROM CASTINGS OR STAMPINGS TO FINISHED PRODUCT

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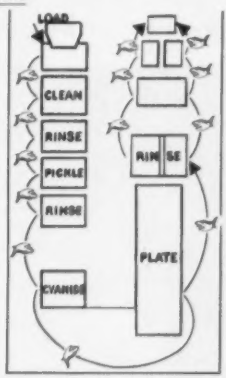
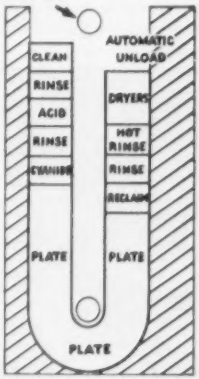
HOW AUTOMATIC BARREL PLATING CAN REDUCE YOUR HANDLING AND BURDEN COSTS—

Compare this
Conventional Horizontal Barrel Line



With this
Stevens Automatic Barrel Installation



Production from *both* installations is the same.

Notice how many more handling steps (indicated by the illustrated hands) and manual load-unload operations (indicated by the arrows) are required for the manual set-up.

Notice, too, how much floor space (indicated by shaded area) is saved with a Stevens automatic installation. No manual operations required with automatic load and unload.

For more data circle **192** on Reader Service Card

ination of rejects by the inspection department because of a too-coarse finish, and reduction of excessive finishing beyond that required to produce the degree of surface finish necessary on a particular part.

Fig. 1—The Sterling Engine Company uses Surfindicator to check machined surface finish without removing workpiece from the machine.

Fig. 2—Surfindicator is used to check finish of cylindrical part at Behr-Manning, Division of Norton Co., demonstrating versatility of this instrument. (Photos courtesy Brush Electronics Co., Div. of Clevite Corp., Cleveland.)

Use of the instrument at the machine also allows the operator to make frequent checks while his machine is in operation, to give prompt warning of failure to meet finish specifications.

Some users place one instrument at each finishing station. Others find that one instrument can be placed near a battery of machines and used by several operators to make checks without interrupting production.

The Surfindicator is a product of Brush Electronics Co., a Division of Clevite Corporation, Cleveland, Ohio. It weighs about 15 pounds. It can be used to measure surface finishes on metals, ceramics, glass and other materials.

For more data circle **3** on Reader Service Card

★ ★ ★

Tape Used to Mask Gear Teeth During Plating

A midwestern manufacturer of precision gears for guided missile mechanisms has eliminated a pre-plating bottleneck by using a plastic electrical tape for masking gear teeth during cadmium plating.

The steel gear, 4 inches in diameter, is cadmium plated except for the teeth, the 1-inch center hole and the 1-3/16-inch outer diameter of the hub.

Production men discussed the masking problem involved with a field engineer of Behr-Manning Co., who suggested use of No. 507 Behr-cat tape, a pressure-sensitive polyvinyl electrical tape which, only 7 mils thick, conforms easily to contours, withstands attack by plating solutions yet is easily peeled off after plating.

After testing, the manufacturer specified this tape in a width about ½ inch greater than that of the gear teeth. Stretched tightly, it is wound three times around the teeth. Then the trailing edge is securely fixed by heating it slightly with a warm iron.

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touch up your products anytime, anywhere... factory-perfect job every time!

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In use by industrial leaders in every field, the Sprayon Self-Spraying Touch Up Tool ends your touch up problems. Protect the eye-appeal of your product—get an extra bonus of customer satisfaction—and do it with big savings in time, cost and equipment investment! Sprayon goes right to your source for your own touch up finish, custom-loads the Tools for you under your own label. Exclusive Sprayon features mean even unskilled help do a factory-match job in minutes...for pennies. Use it anywhere—from your own production line to the final customer. Nothing else to buy—it's a disposable low-cost constant-pressure spray gun—a complete paint shop in a can!

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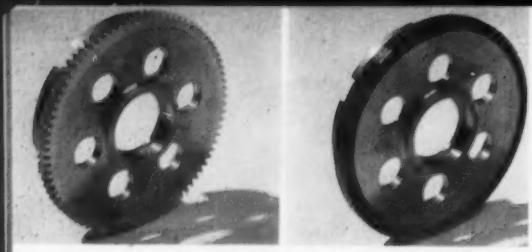

The steel gear, at left, is shown at right prepared for cadmium plating. The gear teeth have been masked with a Behr-cat electrical tape of polyvinyl chloride. (Photo courtesy Behr-Manning Co., Troy, N. Y.)

The center hole and hub of the gears are lacquered before plating.

The company reports substantial time savings have been effected by using this method of masking.

For more data circle **4** on Reader Service Card

★ ★ ★

Molten Salt Strips Plastisol

A tough stripping problem involving the removal of deteriorated plastisol from steel work-handling baskets has been solved by a Detroit manufacturer. This plant now immerses the baskets, which are used in acid pickling, plating, and materials handling, in a molten oxidizing salt bath.

A four-minute immersion in the solution, a product of the Kolene Corporation, is sufficient to strip the 2¼ pounds of tough, tenacious plastisol from the steel baskets. The heart of this process is a patented oxidizing salt known as Kolene No. 5. It is used in an insulated pot surrounded by an outer steel shell.

Baskets are lowered into the bath with an overhead crane, then transferred to an adjoining water-rinse tank after stripping. Residue from the process settles into a removable sludge pan at the bottom of the treatment tank.

For more data circle **5** on Reader Service Card

★ ★ ★

Stripping Plastisol: molten salt removes 2¼ pounds from these baskets in four minutes.

The Surface Treatment and Finishing of Aluminum and Its Alloys, by S. Wernick and R. Pinner. Published by Robert Draper, Ltd., 83/85, Udney Park Rd., Teddington, Middx., England. 580 pages. Price, $12.00.

A comprehensive and up-to-date discussion of all available processes for the surface treatment and finishing of aluminum and its alloys, the book includes discussion of such processes as anodizing and dyeing, electroplating, conversion coatings and other treatments used preparatory to specialized finishing procedures. It also has chapters on mechanical finishing, electrolytic and chemical polishing, cleaning and hard anodizing, hard chromium plating, organic finishing, vitreous enameling and metal spraying.

The book is written primarily for the man with a practical interest, but the research worker and student will also find it useful. Engineers and designers will be interested in the sections on corrosion of aluminum and those relating to classification of alloys and the selection of alloys in relation to the finish.

ATLANTIC GREASELESS COMPOUNDS

are unexcelled

for fast, clean-working

POLISHING & BUFFING OPERATIONS

in the finishing of

METALS, PLASTICS, & WOOD.

Economy-pak foil lined, fibreboard container

ATLANTIC GREASELESS COMPOUNDS are produced by specialists with a background of long experience in the compounding and application of greaseless finishing materials.

The rigidly controlled uniformity of ATLANTIC COMPOUNDS helps you maintain your high finishing standards. This dependable uniformity is assured by the highest grade ingredients and by extremely close quality control in manufacturing.

Devoted exclusively to producing unexcelled greaseless compounds, Atlantic maintains constant research striving for continually improved products. Technical assistance and data available upon request.

Aluminum Tube

THE ATLANTIC COMPOUND CO.

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Finishes That Aid in Appearance and Utility

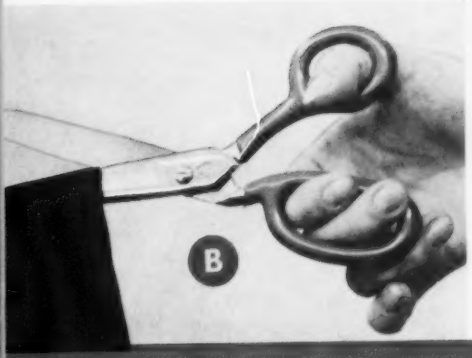
A **Recently-developed lucite lacquer finishes** with a high metallic content are being used to produce strikingly beautiful and durable finishes on the Continental Mark II for 1957, Ford Motor Company's prestige automobile. Four new colors, bronze, silver, medium blue and medium green will be offered. All trim work on this limited production model is polished stainless steel. A total of 55 pounds of this metal is used in producing each car.

B **Foamed plastisol** on the handles of these scissors provides a comfortable grip. Soft and resilient to the touch, but not slippery, the coating adheres firmly to the forged steel. Plastisol coating is available in blue, yellow, green and red, and has good resistance to moisture, perspiration, grease, oil and dirt. Coating is based on resins produced by the Bakelite Company, a Division of Union Carbide and Carbon Corporation.

C **Colored porcelain enameled panels** contrast with satin finished aluminum mullions and frames in a new exterior curtain wall system recently introduced by Kawneer Company, Niles, Michigan. The insulated panels are finished in blue, red, green and black porcelain. Anodized aluminum panels are also available.

D **Silver-covered "Scotchlite,"** a product of Minnesota Mining & Manufacturing Co., is used to make letters on this Chicago street sign easier to read. A semi-transparent brown lacquer was silk screened over the letters to form a background. Use of this type of lacquer provides a sign uniform in appearance both day and night. Base for the signs is aluminum, supplied by the Aluminum Company of America. Exterior of building in background is aluminum.

E **Blue porcelain enameled steel** on the huge clock sign harmonizes with blue anodized aluminum exterior of the new Continental Bank Building in Ft. Worth, Texas. Building is the tallest all-welded steel building in the country. Clock-sign was designed and engineered by Federal Sign and Signal Corporation of Texas.



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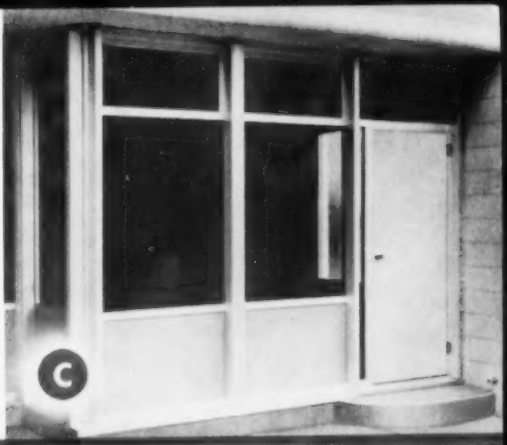

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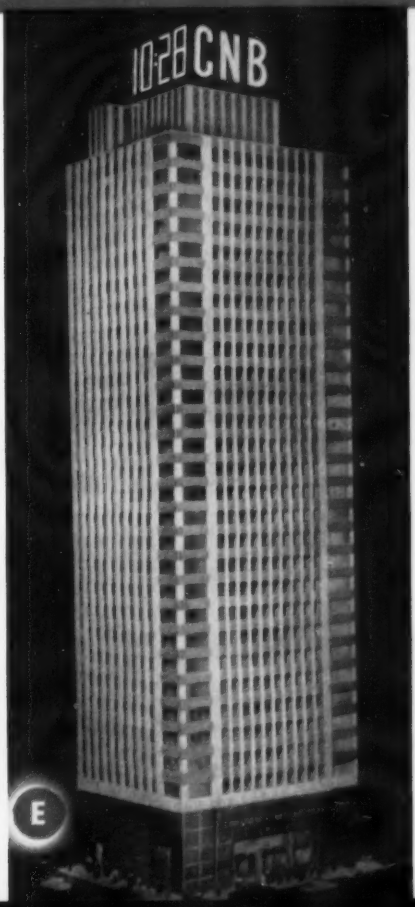
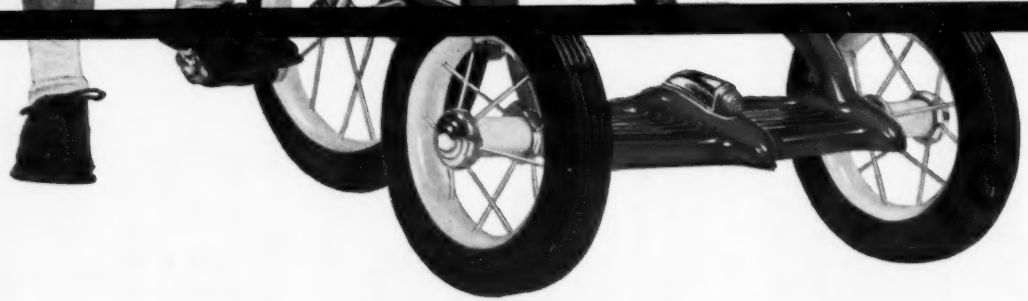


E

He couldn't
be any prouder
of a $6000
convertible!



Time enough for that later. Right now, this shiny, new bike is his pride and joy and the envy of every kid in the neighborhood. And, although neither he nor his friends are conscious of its quality materials and workmanship, Glidden is proud to have shared in its construction.

The bright, colorful finish on this bike and thousands of others is Glidden NUBELITE, the superior baking enamel that offers the maximum film strength and other resistance qualities that will keep this bike "showroom" new for years despite weather exposure and other damage.

Your product, too, whether appliances, industrial equipment or any other requiring a protective coating, can be improved with a Glidden industrial finish. Contact your Glidden Sales Representative or write direct for complete information.

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Industrial Finishes for Every Product

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DEVILBISS

REDUCE with

NOT THIS

Paint sprayed cold with high atomizing air pressure often looks like this.

THIS

Paint sprayed hot atomizes with lower air pressure; reduces fog, saves material.

HOT-SPRAY METHOD LETS YOU—

PAINT WASTE

low-pressure spraying

Great reductions in spraying pressures — in some instances as much as 60% — are a practical reality with the DeVilbiss hot-spray method! Thinning the spray material with heat permits easier atomization at far lower air pressures, eliminating excessive overspray.

Instead of billows of wasteful spray fog, common to higher pressure spraying, the DeVilbiss hot-spray, low-pressure system actually puts *more* paint on the surface . . . *less* in the atmosphere. As for the paint film itself, there is less shrinkage, better coverage, and less tendency to run, sag, leave fatty edges.

This means increased paint mileage, heavier film build where needed . . . all at a savings of up to 50% in materials!

What's more, working conditions are improved; maintenance and clean-up time are cut to a minimum.

Low-pressure spraying with DeVilbiss hot-spray equipment can benefit you in many ways. Without obligation, a DeVilbiss representative will gladly analyze your present operations, and arrange a demonstration of what you can expect in material savings, improved quality, reduced maintenance, easier application. Call now, or write for Bulletin F-286.

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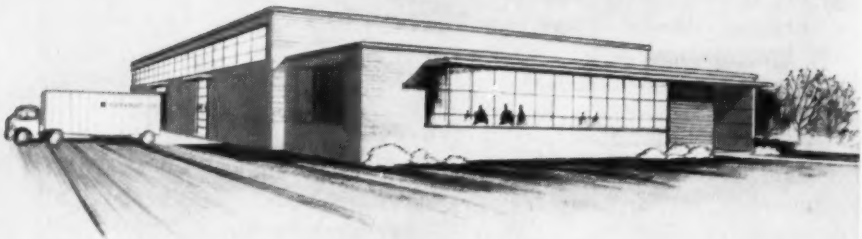
NEW HEADQUARTERS

of

Metal & Thermit — United Chromium of Canada, Limited



These new larger quarters will contain manufacturing and warehousing facilities, service laboratory, and sales offices. We are grateful to the many friends and customers whose recognition of the benefits in Metal & Thermit and Unichrome metal finishing processes and materials made our growth possible and this needed expansion a reality.

Metal & Thermit—United Chromium of Canada, Ltd.

36 Factory Street, Rexdale, Ontario

MATCHED PLATING PROCESSES

- Pyrophosphate Copper
- Bright Nickel
- SRHS® Chromium

Stabilizers for Vinyl Plastics

★ Organotin and other Thermolite Stabilizers

Finishes for Special Requirements

Tin & Tin Alloy Plating
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Chromate Treatments

HEADQUARTERS FOR:

Processes and materials for metal finishing; tin, antimony, zirconium chemicals and products.

Metal & Thermit — United Chromium of Canada, Limited

36 Factory Street, Rexdale, Ontario

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Ultrox 500W
Sodium Antimonate
Tin oxide

Plating Equipment

★ Tantalum Heating Coils
★ Rectifiers
★ Anodes and other equipment

PLASTISOLS & ORGANIC COATINGS

Ucilon® Protective Coatings
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Unichrome Plastisols and Rack Coating 218X

organotin chemicals

Slime Control Agent for Paper Industry
Chlorine scavengers
Catalysts for curing silicone oil emulsions

UNICHROME

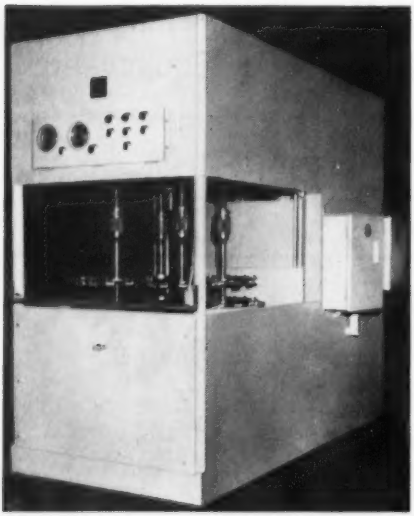
For more data circle 197 on Reader Service Card

New Equipment, Materials, Processes

› Cleaning
› Polishing
› Plating
› Paint Finishing

Mechanical Finishing Process

The Spin-Finish Machine, recently introduced by the Grav-i-Flo Corp., Dept. PF, 400 Norwood Ave., Sturgis, Mich., is said to offer a fast, efficient means of mechanical finishing brass, zinc-base and aluminum die-cast parts prior to plating.



View of Grav-i-Flo's Spin-Finish Machine: for mechanical finishing preparatory to plating.

The machine used in the process is capable of finishing a multiple mounting of parts in a single, automatically timed operation. A specially formulated compound is employed. Surface finishes of a high luster can be obtained with the Spin-Finish process, the manufacturer states.

The process is dust and fume free, and requires no blowers or ventilation.

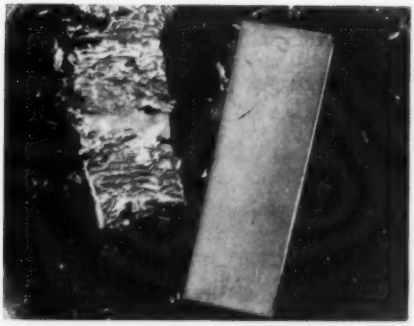
Unusually shaped parts can be finished in a single operation, Grav-i-Flo reports. Operating cycles vary from four to 16 minutes. Groups of as many as four different parts can be run simultaneously. A redesigned fixture permits locking or unlocking parts on fixtures with a single turn of a cam.

For more data circle **6** on Reader Service Card

★ ★ ★

Compressively Stressed Rhodium

A rhodium plating process which is said to produce compressively stressed deposits, eliminates curling, cracking and peeling, according to an announcement from Sel-Rex Corp., Precious



Dissolving basis metal from two rhodium electroplated brass strips demonstrates compressively stressed deposit of Sel-Rex Rhodex. Sample on left had high tensile stress, causing disintegration. Rhodex compressively stressed electroplate (right) remains unimpaired.

Metals Div., Dept. PF-12, 155 Manchester Pl., Newark 4, N. J. Known as Rhodex-CS-(compressively stressed rhodium), the process is expected to be of special interest to electrical and electronic manufacturers.

According to the manufacturer, Sel-Rex Rhodex -CS- has been subjected to extensive tests and experimentation, necessary for the filing of the patent application, which is pending. One of these tests entailed dissolving the basis metal from an object plated with Rhodex-CS-Rhodium. It is reported that a continuous electroplated film remained, the edges curling toward the basis metal, indicating that the deposit was under compressive stress.

Sel-Rex states that the rhodium so deposited will materially increase the fatigue resistance of the basis metal.

For more data circle **7** on Reader Service Card

★ ★ ★

Hot-Tin-Plate Process

Somers Brass Company, Inc., Waterbury, Conn., has developed a special hot-tin-plate process. It is said to provide the smooth surface, solderability, adherence and absence of slag essential to manufacturers of printed circuits, capacitors, and cable wrappings. Tin coatings of 0.00002 to 0.00008 inch and 0.0002 to 0.0003 inch can be applied to brass, copper, bronze and other thin strip metals, in gauges from 0.012 down to 0.002 inch and widths from ⅛ to 6 inches.

For more data circle **8** on Reader Service Card

★ ★ ★

Aluminum Etchant

Wyandotte Chemicals Corporation, Wyandotte, Mich., has recently announced Mil-Etch, a caustic-type, nondusty aluminum etchant that suspends dissolved aluminum in solution, thus reducing or eliminating scale build-up that must be chipped off tank walls. This product will not develop scale throughout the entire use cycle.

A smooth, bright, satin finish surface is produced by use of this product. Both regular and deep etching of all standard aluminum alloys are feasible. Mil-Etch develops a low level foam blanket,

Wyandotte Mil-Etch Aluminum Etchant helps keep tank walls clean and easy to maintain.

which prevents fuming. Lightly soiled work may be etched without any pretreatment—dirty work or work containing heavy oil or drawing compound should be precleaned.

Mil-Etch is non-dusty, will not cake in the drum, and has good tank life, the manufacturer states. It may be used until "loaded" with dissolved aluminum. A simple test kit is provided users for effective solution control.

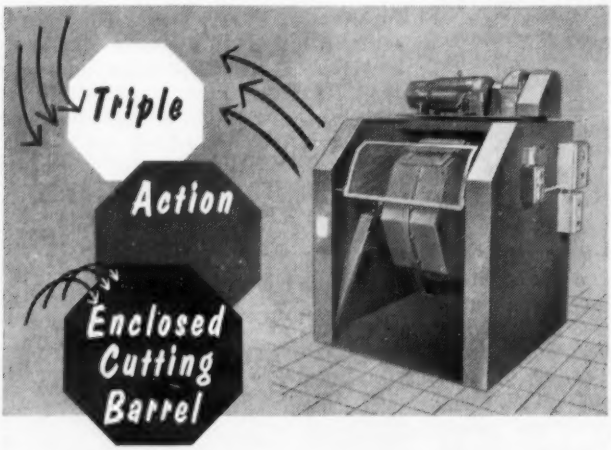
For more data circle **9** on Reader Service Card

★ ★ ★

Fume Scrubber

Heil Process Equipment Corporation, 12901 Elmwood Ave., Cleveland 11, Ohio, has announced a fume scrubber designed for removing acid and other corrosive fumes from the air. It is suitable for use with pickling operations, electroplating processes, and anodizing installations, or other corrosive fume producing systems.

Eight standard sizes are available, designated the 720 Series, with capacities of 1,000 c.f.m. to 30,000 c.f.m. in several materials of construction. Rigidon (glass reinforced plastic) is used for most acids including hydrochloric, sulfuric, phosphoric, and nitric; rubber-lined steel is used for hydrochloric, hydrofluoric, sulfuric, phosphoric, and most acids, as well as caustics; carbon steel is used for most caustic and chromic acid fumes. Other materials may be specified for special applications.



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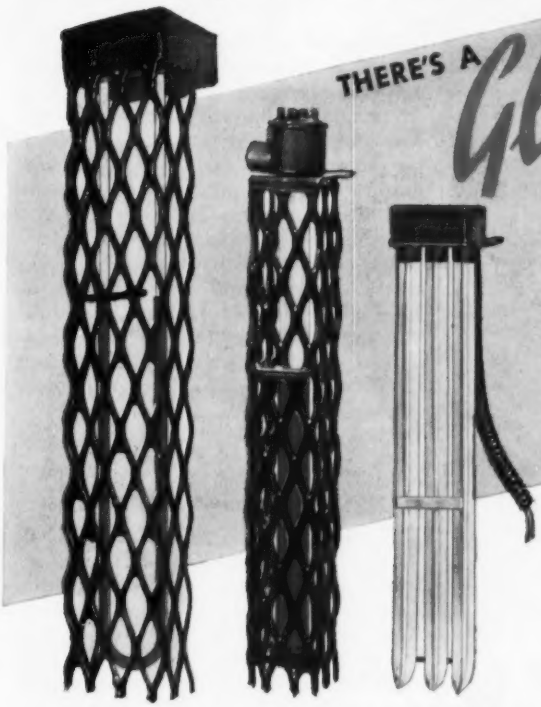

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For more data circle **199** on Reader Service Card

New Rhodium Plate Won't Curl, Crack or Peel!

Sel-Rex

RHODEX

A rhodium plating process that produces *Compressively Stressed deposits . . . developed specifically for industrial applications. RHODEX will materially increase the fatigue resistance of the metal over which it is deposited.

Please rush descriptive literature and technical data on Sel-Rex RHODEX (Compressively Stressed Rhodium.)

*Patent Pending

SEL-REX CORPORATION

Precious Metals Division

Dept. PF-12, 155 Manchester Pl., Newark 4, N. J.

For more data circle **200** on Reader Service Card

Many advantages are found in the use of a fume scrubber. Costly damage due to corrosion can be eliminated on plant buildings and employees' cars. General air pollution can also be eliminated, giving improved community relations. Where it is permissible to return air to the room, savings can be realized in room heat.

The solid plastic scrubber is immune to acid fumes outside as well as internally, thus reducing maintenance. The scrubbers operate on the principle of water spray absorption and mist conditioning followed by a cyclonic separation.

For more data circle **10** on Reader Service Card

★ ★ ★

Polishing Fixture

Oswald Manufacturing Co., 50-17 47th Ave., Woodside 77, N. Y., has introduced a ceiling-mounted polishing fixture, designed to be used for polishing, buffing, satin finishing and coloring with buffs, set-up wheels or belts.

This fixture can be used with present equipment. Typical parts now being processed with this fixture are: auto accessories, hardware, plumbing goods, holloware, cooking utensils, lighting fixtures and lamps.

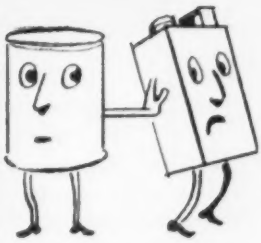
For more data circle **11** on Reader Service Card

★ ★ ★

Tubular Screen-Type Filter

A filter introduced by Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind., is designed for efficient filtration of liquids requiring removal of minute particles. The Delpark Filter-Matic Filter incorporates small diameter screen tubes manifolded together into a common suction header. The sludge-laden liquid is drawn through by a special multiple-chamber

How to cut costs with *Airless* spray painting by BEDE



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Airless Spray Painting is as much superior to common methods used today as atomization was over the brush and bucket method.

If you care about your company's coating costs, investigate Airless today. You too will be amazed at how much you can save. Write today. Be sure to ask for a demonstration.

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HOT SPRAY AND AIRLESS SPRAY COATING EQUIPMENT

Jackson St., Dept. 1 **Amherst 44-711** **Amherst, Ohio**

In Canada: Bede Products Canada Ltd., 864 Pape St., Toronto

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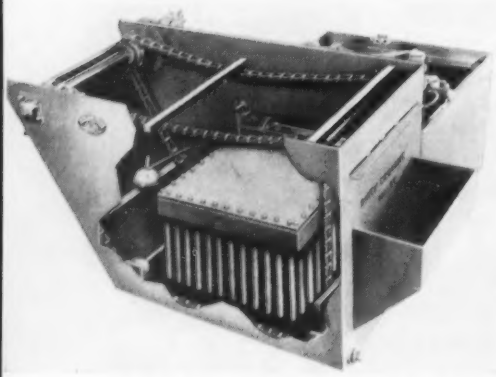

Cutaway Drawing of Delpark Solution Filter

valve and pumped into a filtered-liquid compartment. As deposits reduce the liquid flow through the screen tubes, the unfiltered liquid level begins to rise. At a predetermined level, a float actuates a switch controlling the multiple chamber valve, reversing the liquid flow. The reversed flow backwashes accumulated deposits from the screens. As the reverse flow of clean liquid causes the unfiltered liquid to continue its rise, the float again reverses the flow of liquid through the valve, returning to the filtering cycle.

Sludge removed from the screen tubes drops to the bottom of the filter compartment, where it is removed by chain driven dragout flights.

When precoat is used, an automatic measuring device with a vibrating mechanism to prevent bridging of the precoat material is mounted above the filter inlet. It automatically feeds a predetermined amount of precoat material at each backwash period. This precoat feeding device is actuated by the air cylinder feed, which operates the multiple chamber valve. This auto-

SPRAY IT ON
in one coat . . .
STRIP IT OFF
in one sheet

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COVERS BOOTH COMPLETELY WITH ONLY 1 COAT!
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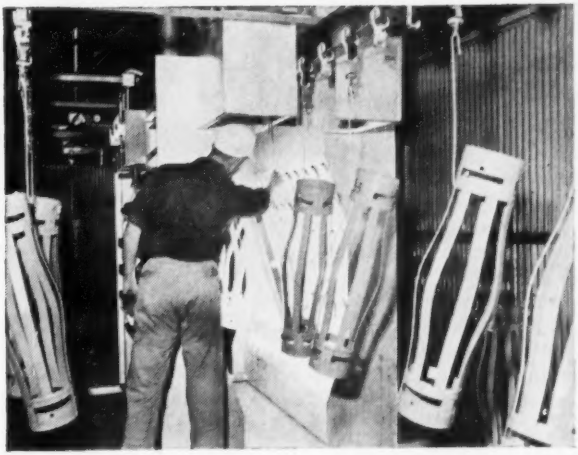
PARLON® STAYS ON

Protects Oil Drilling Equipment



QUICK DRYING — Parlon-based paint supplied by Socony Paint Products Company provides a durable, low-cost finish for casing centralizers for oil equipment manufactured by Baker Oil Tools, Inc.

CORROSION RESITANT—When pulled from the well in the course of drilling, units look like this. The Parlon-based finish provides protection from corrosive attack of salts, acids, and alkalies in well fluids.

Parlon-Synthetics (synthetic finishes fortified with chlorinated rubber) provide outstanding resistance to weathering and other corrosive conditions in an easy-to-apply, fast-drying finish that keeps production lines moving. More and more manufacturers are finding the answer to their need for a low-cost protective coating with an improved degree of chemical and corrosion resistance.

You can get a Parlon-Synthetic exactly suited to your own finishing requirements. For technical information, call or write your regular supplier of quality finishes, or write directly to Hercules.

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INCORPORATED
927 Market Street, Wilmington 99, Del.

CR56-6

PARLON (CHLORINATED RUBBER) PAINTS ARE AVAILABLE FROM 400 MANUFACTURERS UNDER THEIR OWN BRAND NAMES

For more data circle **203** on Reader Service Card

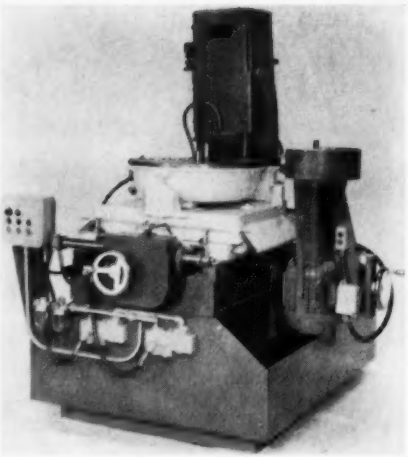
matically adds new precoat at the same time the old precoat is backwashed from the tubes.

For more data circle 12 on Reader Service Card

★ ★ ★

Platen-Type Abrasive Belt Machine

For high-speed precision grinding and finishing of outside diameters, an automatic rotary abrasive belt grinder has been introduced by Engelberg Huller Co., 831 W. Fayette St., Syracuse 4, N. Y. The wet-or-dry belt grinder, for o.d. grinding of ferrous and nonferrous metals and other materials, is designed to handle circular parts from 26 to 40 inches in diameter. It can be modified for other diameter ranges.



Platen-Type Abrasive Belt Machine

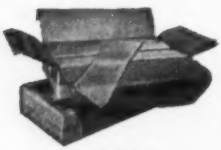
The self-contained motor-driven work table rotates at standard speeds of ¾ or 3 r.p.m., with optional change

For Dust Free Finishes!

BOND TACK CLOTH

IN ROLLS

Cut off any size piece to use as needed.



IN BULK

Cut and folded. Ready to use.

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Now Available in Rolls or Cut Bulk—White or Gold

In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

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All with spray

All from can

ALL . . . at time

POLY-NAM . . . the one versatile finish you need to achieve two or more colors—simultaneously . . . from one container . . . and in a single spray.

You get varied and striking tone-on-tone effects—with interesting, textured dimension.

POLY-NAM goes on wood, wallboard, paper, metal and concrete—in a rich, semi-gloss finish. Air dries to touch in an hour; dries hard in four hours. Stands up under frequent scrubbing, and is resistant to wear and abrasion. Easily retouched.

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DURALAC CHEMICAL CORP.

84 LISTER AVENUE, NEWARK 5, N. J.

For more data circle 205 on Reader Service Card

gears for other speed requirements. An air-controlled infeed mechanism carries the rotating parts in against the belt, and infeed travel is adjustable, with a minimum of 0.0016 inch per revolution.

To ensure even distribution of belt wear, the parts are moved back and forth across the belt face by means of an air-hydraulic reciprocating device, with a 7-inch oscillation stroke. The table is adjustable from 0 to 45 degrees for angular grinding.

For applications requiring deburring, such as stator rings or bucket wheels, an optional tampico brush attachment is available. The brush is moved in against the belt-ground work by a manual control wheel, and can be swiveled to coincide with the grinding angle of the machine table.

Standard abrasive belt size is 8 by 107 inches, with belt speeds of 2,000 to 5,000 s.f.p.m. available.

For more data circle 13 on Reader Service Card

★ ★ ★

Aluminum Etchant

Hanson - Van Winkle - Munning Co., Matawan, N. J., has announced 85S Aluminum Cleaner, an alkaline material developed for use as a caustic etchant. It is said to be an efficient and effective chemical for cleaning and brightening aluminum surfaces.

It contains an inhibitor which eliminates the formation of scale on tank walls and coils, the manufacturer reports. Formulation of the material

Amazing New Lakeseal liquid ORGAN-TU

Tested LIQUID ORGANIC TUMBLING COMPOUND. All types of work from rough deburring to precision grinding and burnishing to give you EXCEPTIONALLY HIGH COLOR and finish.

Can be used without attack on all kinds of parts—steel, stainless, copper, brass, zinc, aluminum, plastic, and rubber.

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Send me without charge or obligation complete data about ORGAN-TU.

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SPECIAL NOTICE: Through facilities of a barrel manufacturing company, we can process test parts for you free. Check here if interested ☐

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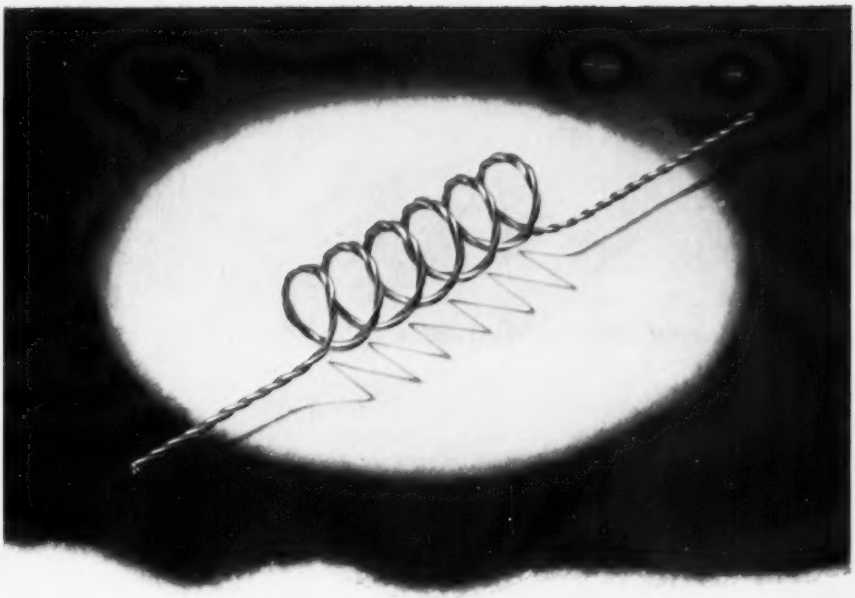

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In both batch and continuous vacuum metallizing operations, Sylvania tungsten heater source coils are designed to give you more shots per dollar.

Manufactured under exacting standards of uniformity and high metal purity, these Sylvania heater coils are produced expressly for vacuum metallizing service. Special tungsten wire is stranded and coiled to specifications established through Sylvania's own experience in the production of reflector lamps—as well as the experience of others. Sylvania offers you a wide selection of ready-made tungsten coils, in single or multiple strand. If you prefer to form your own heater source coils, there is a full range of diameters and types of Sylvania tungsten wire to choose from.

Write for the new booklet, "Sylvania Tungsten Coil Products."

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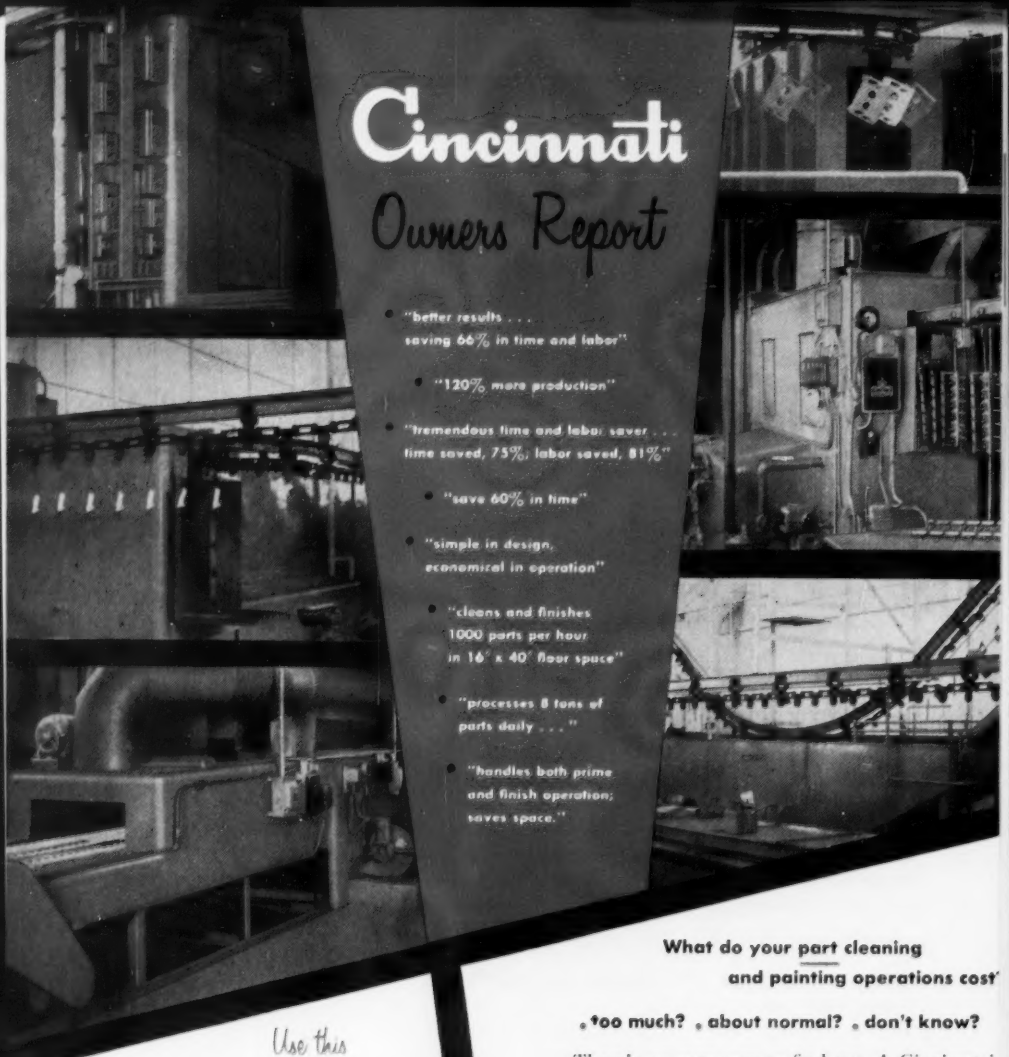

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minimizes the formation of sodium aluminate, which inhibits etching at high concentrations; thus the material provides maximum utilization of the caustic soda.

Processing Cycle

Since aluminum alloys containing copper, manganese or similar metals generally emerge from the etchant in a darkened condition, the following cycle is recommended for best results:

1. Preclean by alkaline soak in Matawan Cleaner 52 at 3-4 oz./gal. and 150 deg. F. This treatment is advisable when the aluminum is oily or greasy due to cutting oils or tallow. Precleaning prevents excessive concentration of soaps, which contribute to foaming, and also reduces the amount of unsaponifiable material on the etchant bath surface, a common cause of preferential etching.
2. Rinse (if precleaned).
3. Treat in aluminum 85S etchant at 8 oz./gal. for 2-5 minutes at 150 deg. F.
4. Rinse, one minute.
5. De-smut in Matawan A-200 at 12 oz./gal. for 1-2 minutes at 130-135 deg. F. This bath will operate over long periods with no attention other than periodic addition of A-200 to maintain required concentration.
6. Rinse, one minute.
7. Rinse, hot water, one minute.
8. Dry.

H-VW-M recommends that steel tanks be used for 85S etchant baths and ventilation be provided, due to the hydrogen evolution occurring.

H-VW-M provides complete operating instructions and analytical processes for the etchant, to enable the user to maintain it at maximum efficiency. For example, the bath is initially made up with 8 oz./gal. of 85S etchant. As sodium aluminate builds up, the etchant concentration is increased to exceed sodium aluminate content by 3 oz./gal. The latter will reach a maximum of about 15 oz./gal.

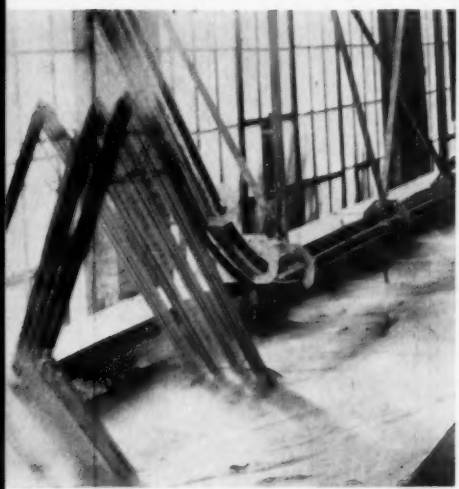

Fig. 1—Aluminum window frames are cleaned in Hanson-Van Winkle-Munning 85S Cleaner.

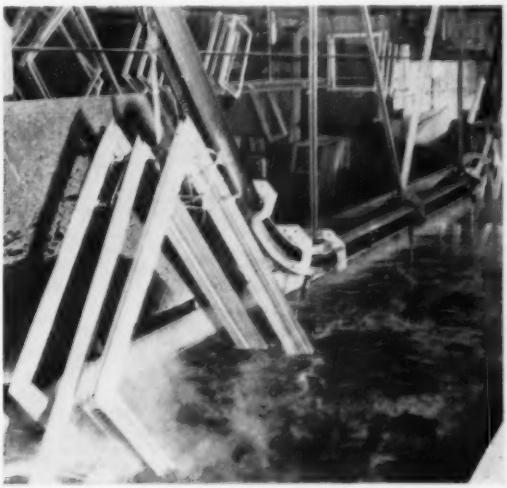

Fig. 2—Cleaned parts are rinsed in water for one minute following immersion in 85S bath.

By maintaining this excess etchant content, the bath can be operated for long periods without dumping, since hydrous aluminum oxide will settle out in the form of sludge. Dumping is necessary only when sludge becomes excessive, and it can be flushed through standard sewage facilities or recovered, if desired.

For more data circle **14** on Reader Service Card

★ ★ ★

Liquid Detergent

Development of a concentrated liquid detergent, called Oakite Liqui-Det, has been announced by Oakite Products, Inc., 54C Rector St., New York 6, N. Y.

The detergent is said to go into solution instantly and to develop copious suds, in hard or soft water, hot or cold, and then to penetrate and loosen the most common soils quickly. Furthermore, the company states, it can be used repeatedly without rinsing, and without causing any build-up of film or discoloration. It is safe on almost every type of surface and pleasant to the hands. Concentrations as low as ¼ ounce to the gallon of water are being used successfully.

For more data circle **15** on Reader Service Card

★ ★ ★

Degreaser

The Dawson Corporation, 302 Fifth Ave., North Pelham, N. Y., has developed a degreasing machine that utilizes trichlorethylene or perchlorethylene vapors. Called the '75' Chromplater Vapor Degreaser, the apparatus has a degreasing compartment 18 by 10 by 18 inches deep.

The vapors are generated by thermostatically controlled electric heat which boils the solvent in the degreaser. The machine operates on a 110-volt, single

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Specialists in the Unusual—Since 1901

Rhodium Plating for jewelry offers the advantages of whiteness, lustre and corrosion resistance . . .

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Can be applied to many surfaces from less than one to one hundred milligrams per square inch . . .

Consult our staff, without obligation, about your specific plating problems.

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"PROOF of THE FINISH is in THE OVEN" ...to a great extent.

We're inclined to base this statement on the testimonies of the many manufacturers we have been privileged to serve.

High volume, high quality finish production is almost a necessity everywhere today.

Users of our oven designs and installations tell us they are accomplishing this with comparatively low operating costs.

This makes for satisfaction all around.

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"Our paint appearance and gloss has improved considerably since we installed the New *LANLY BAKE OVEN.*"

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"We bake twenty-two colors in pastel shades on metal. With the LANLY OVEN we have experienced highly satisfactory results in obtaining uniform color and complete baking."

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We'll welcome the opportunity to discuss your drying and baking operations with you without obligation.

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CLEVELAND, OHIO

For more data circle 210 on Reader Service Card

phase, 60-cycle current. Two electrical outlets are needed, one for the 1,600-watt heater and the other for a spray pump which provides a stream of solution for slush cleaning.

The vapors are retained in the degreaser by a cooling coil which condenses the vapors at a predetermined level. Contaminated solvent can be reclaimed by vaporizing and condensing in the storage compartment.

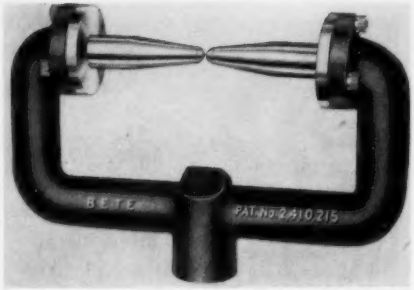
For more data circle **16** on Reader Service Card

★ ★ ★

Opposed-Jet Nozzles

A line of opposed-jet impingement-type nozzles has been introduced by Bete Fog Nozzle, Inc., 309 Wells St., Greenfield, Mass.

Efficiency of atomization at any operating pressure and a more uniform drop size are provided by the Bete nozzle, the manufacturer states.



Bete Opposed-Jet Impingement-Type Nozzle

Their performance results from a patented design of the nozzle tip interiors, producing laminar flow at the point of impingement with a clear, laminar sheet being generated. This

BISON CORPORATION

BUFFS

Air-cooled VENTEX buffs, with permanent or removable metal centers are available for every job!

BUFFS • CLEANERS
COATED ABRASIVES
POLISHING WHEELS
ANODES • HEAT
TREATING PRODUCTS
EQUIPMENT AND
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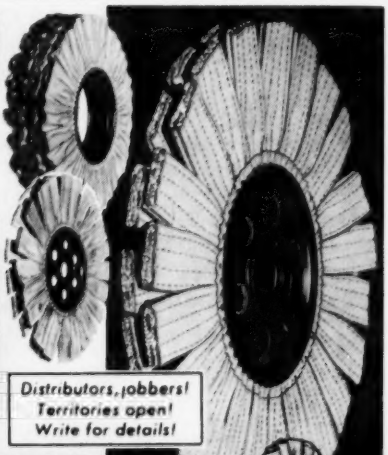
COMPOSITIONS

Precision manufactured on latest, modern equipment in the BISON Canton plant — assuring uniform quality.



Distributors, jobbers! Territories open! Write for details!

COMPLETE SERVICE FOR METAL FINISHING

Bison Corporation

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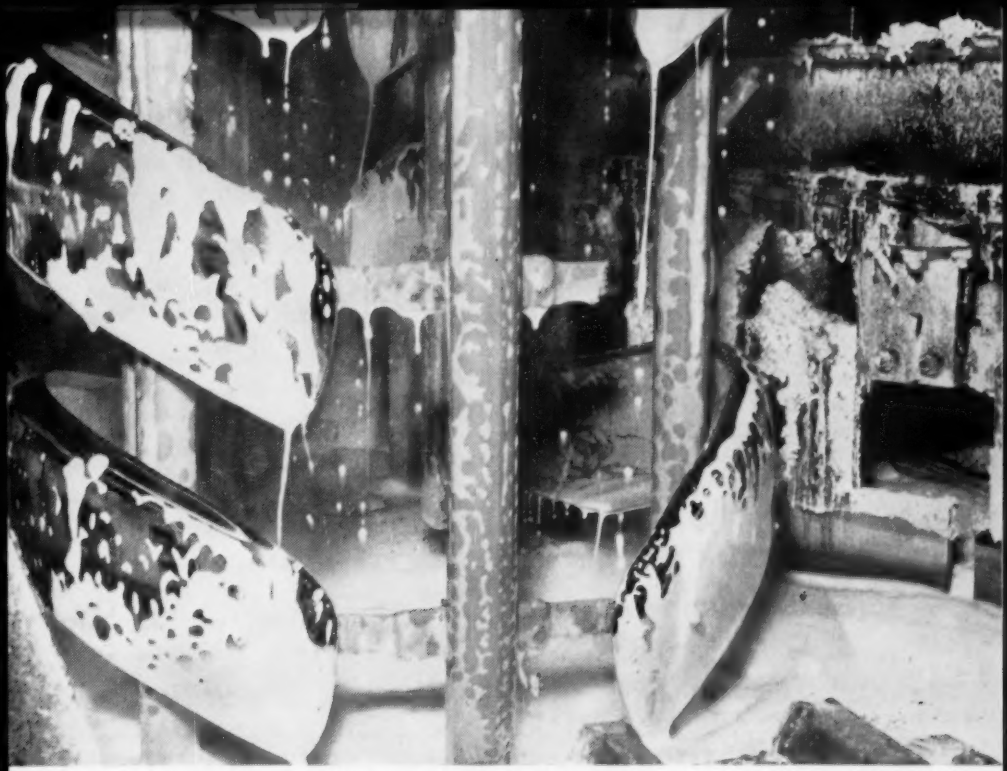

Auto bumper wings get fast, thorough stripping in Dow Sodium Orthosilicate to remove buffing compound prior to final chrome-plating. Same effective cleaning compound is used at earlier step in operation, stripping bonder lubrication before bumper is copper-plated.

DOW SODIUM ORTHOSILICATE

strips buffing compounds, other tough contaminants with real speed

Parts reach your cleaning operation carrying heavy residues of buffing or drawing compounds? Strip them good and clean . . . and do it *faster* . . . with high-powered Dow Sodium Orthosilicate metal cleaner.

Dow Sodium Orthosilicate is built and balanced to deliver low-cost, reject-free runs on almost any type of metal part. High acid capacity, high pH . . . Dow Sodium Orthosilicate removes oils, fats and waxes with uniform economy whether your cleaning is dip, soak or electrolytic. The extremely high electrical conductivity of Dow Sodium Orthosilicate solutions permits high current density *without* excessive voltage.

For lower costs per run, get Dow Sodium Orthosilicate. For detailed information on advantages and use, get a free copy of the new Dow Sodium Orthosilicate booklet. Call the Dow sales office near you or write direct to THE DOW CHEMICAL COMPANY, Dept. AL 766K, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

For more data circle **212** on Reader Service Card

sheet, in turn, breaks up into fine droplets of uniform size.

According to the manufacturer, the design ensures satisfactory operation over a long period of time, because there are no internal parts to clog or wear, and the laminar flow through the nozzle tips reduces wear at that point.

The "Bete O.J. Series" nozzles are available in four standard sizes, ranging in flow rate from 3 to 30 g.p.m. Pipe connections are ⅜, ¾, 1 and 1½ inches; overall dimensions are 6, 9, 12, and 18 inches.

For more data circle **17** on Reader Service Card

★ ★ ★

Barrel-Handling Truck

A drum and barrel truck for placing heavy drums on pallets has been announced by Valley Craft Products, Inc., 770 Jefferson Ave., Lake City, Minn.

Valley Craft Ezy-Rol Barrel-Handling Truck

To page 108→

HOW TO INCREASE PAINT SPRAY BOOTH EFFICIENCY — AND LOWER COSTS!

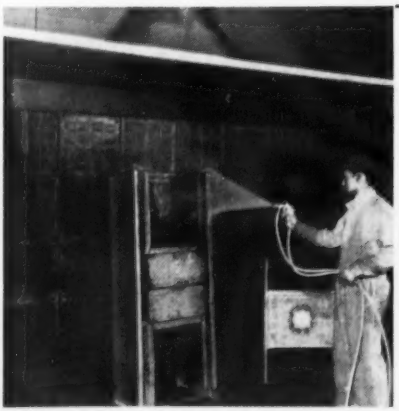

Photo Courtesy Globe Hoist Co., Philadelphia, Pa.

RP PAINT ARRESTORS REDUCE MAINTENANCE, FLOOR - SPACE REQUIREMENTS & DOWN-TIME

Efficiency and economy were combined to improve the paint spray operation in this booth illustrated. RP Paint Arrestor Pads trap overspray, are easily, inexpensively replaceable and adaptable to almost every type operation. If you spray paint—check the RP Paint Arrestor way to savings and efficiency.

RP ... PRODUCTS OF RESEARCH

RESEARCH PRODUCTS CORPORATION

Dept. 38, Madison 10, Wis.

For more data circle **213** on Reader Service Card

ALWAYS FINISHES FIRST

and cuts costs two ways because it's completely automatic!

fast cutting, easy cleaning with

Liquimatic®

the perfect liquid compound for all metal finishing

What are the two big cost factors in your buffing room? Chances are *buff life* figures big when you're talking production costs . . . and the second big factor is *production time* itself. Liquimatic Application Systems are licking these two cost problems in buffing rooms all over the U. S.—because Liquimatic is automatic. An electrically timed system feeds Liquimatic Buffing Compound to the buff in the exact amount to give you the exact cut you need. Because the buff is continually lubricated, buff life is extended up to **200%!**

And with Liquimatic there's no compound wasted, no gubbin problem, no hand application, no changing bars—think of the cost savings you can effect in *your* buffing room with these advantages! Savings in buff life alone can soon pay for a complete Liquimatic Application System . . . a system that will continue to save you money – *automatically*.

Check the other features of Liquimatic Buffing Compound . . . then write today for your free copy of Liquimatic's big, new folder that tells the whole cost-saving story of Liquimatic in *your* buffing room.

These additional Liquimatic features mean real savings in terms of time, money, safety—

- longer buff life
- completely automatic
- fast cutting
- easy cleaning
- non-settling
- high flash point
- long storage life
- sprayable viscosity
- adhesive slow-wearing buff face

Liquimatic *. . . gives more buff mileage*

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING COMPANY

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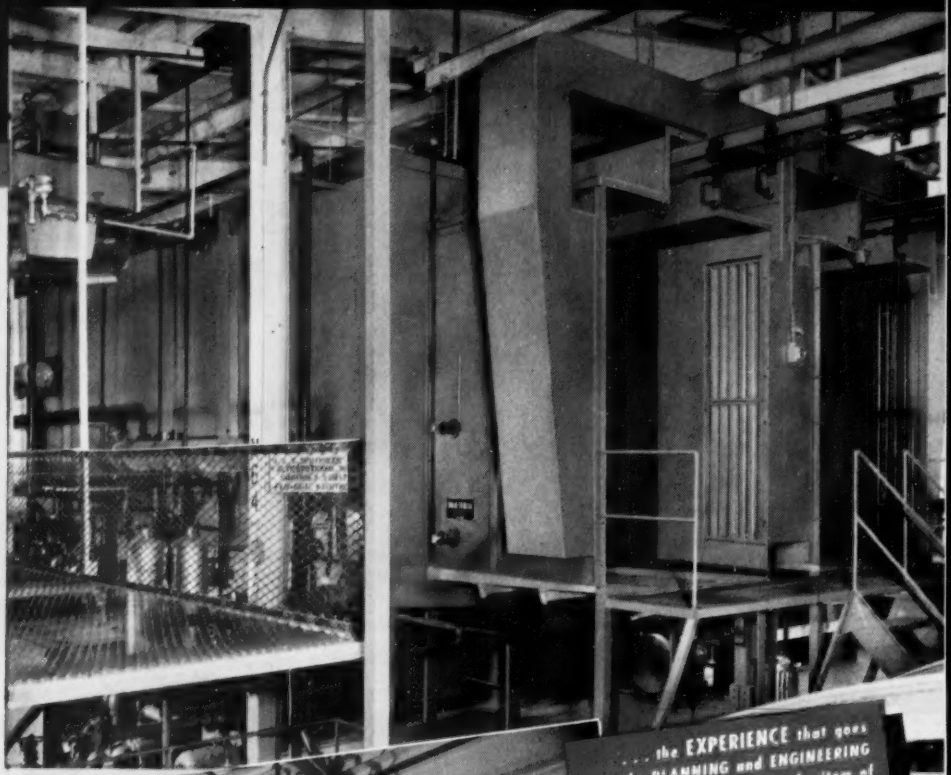
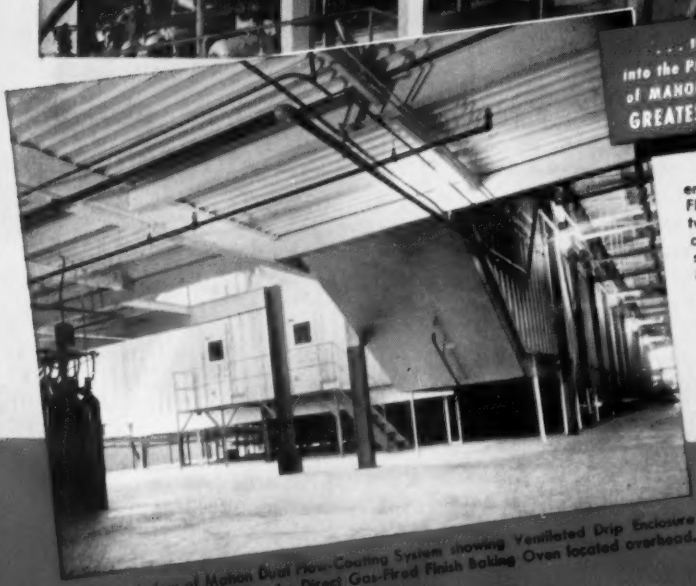
COMPLET



. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE to YOU!**



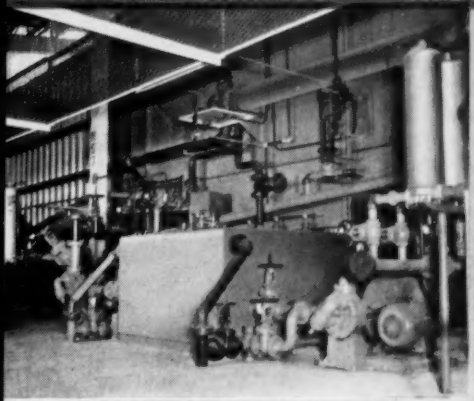
General view of Mahon Dual Flow-Coating System showing Ventilated Drip Enclosure and the Inclined Tunnel to the Direct Gas-Fired Finish Baking Oven located overhead.

Above is a view showing entrance end of the Mahon Dual Flow-Coating Machine which has two separate and independently controlled Flow-Coating Units serving two parallel conveyor lines. Automatic equipment is provided to maintain constant paint temperature and viscosity. Paint and Solvent levels in the 450-gallon operating reservoirs are automatically maintained through supply pipes from a remote paint mixing room.

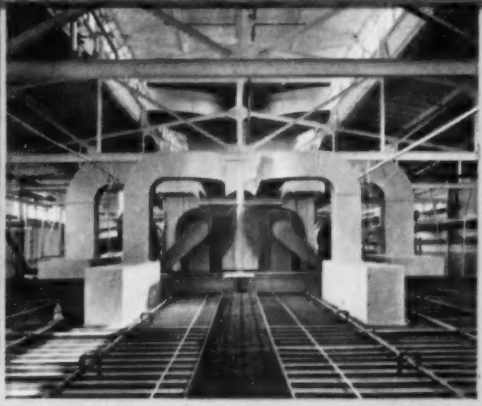
M

E Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



Each Flow Coater has Combined Paint and Solvent Reservoirs, Recirculating Pumps, and Temperature and Viscosity Controls.



View of Mahon Air Supply and Exhaust Equipment which provides Filtered Air and Ventilation for the entire system.

Dual FLOW COATER in Automobile Plant CUTS PAINT VOLUME, Manpower Requirements, and Operating Costs!

The new Flow-Coating System illustrated here has proved a tremendous saving in painting automobile hoods, fenders, fans and miscellaneous parts. The system has two parallel conveyor lines carrying parts through a dual Flow-Coating Machine—either side of which may be operated independently. Each section of the Flow-Coating Machine is served by a 450-gallon paint reservoir and a 450-gallon solvent reservoir and are fitted with automatic equipment to maintain constant paint viscosity and temperature. Other equipment in this system includes a ventilated drip enclosure with sumps, scavenger pumps, and facilities for solvent flush-down, a finish baking oven and an air supply and exhaust system. This system now paints, on one line, all parts previously painted in two dip-coating systems which required an operating volume of 16,000 gallons of paint. One man operates and maintains the new Mahon System, where twelve men were required to operate and maintain the old equipment. The savings in material, labor and operating costs are obvious. If you have a finishing problem, it will pay you to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you will find them better qualified to advise you, and better qualified to do the all-important planning, engineering and coordinating of equipment . . . and, if you care to investigate, you will also find that Mahon equipment will serve you better over a longer period of time. See Sweet's Plant Engineering File for information, or write for Catalog A-657.

THE R. C. MAHON COMPANY • Detroit 34, Mich. • New York 17, N. Y. • Chicago 4, Ill.

Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow Coaters and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

AHON

Designated Ezy-Rol Barrel Cart, this cart allows the truck's shoes to be placed on edge of the pallet so that in one forward motion the drum can be elevated to the pallet with a minimum of operator effort. Drums also can be lowered safely from pallets.

A spring-operated chime hook drops over the barrel edge as the truck is moved against the barrel without the operator touching either the hook or the barrel.

For more data circle **18** on Reader Service Card

★ ★ ★

Buffs for Die Castings

Type "K" and Type "Q" Pressure-Cooled Buffs, made for finishing die castings or permanent mold castings, have been introduced by United Buff Products Corp., 231 Dow St., Passaic, N. J. These buffs tend to remove excessive buffing compound residues from parts being buffed, leaving a cleaner finish preparatory to the plating cycle, the manufacturer states.

For more data circle **19** on Reader Service Card

★ ★ ★

Rust-Preventive Oil

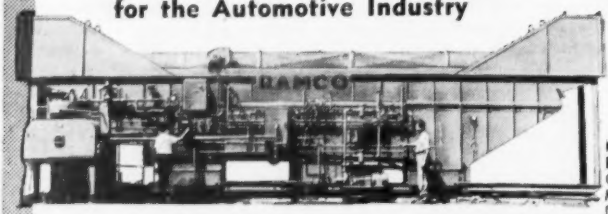
Froil, a corrosion-protective oil, has been introduced by Octagon Process, Inc., Staten Island 1, N. Y. Froil is said to displace water and remove fingerprints and at the same time to produce a moisture-proof and vapor-proof barrier against corrosion. Polished metal parts protected with Froil have withstood 100 per cent humidity for two months without rusting, the manufacturer states.

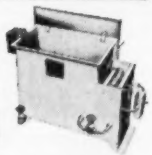
Froil may be used for protecting precision parts, castings, dies, tools, gages and highly machined and polished parts during their manufacture, storage and shipment. As a water dis-

RAMCO degreasers

from Laboratory Units to Giants for the Automotive Industry

ANOTHER RAMCO PRODUCT





LABORATORY DEGREASER

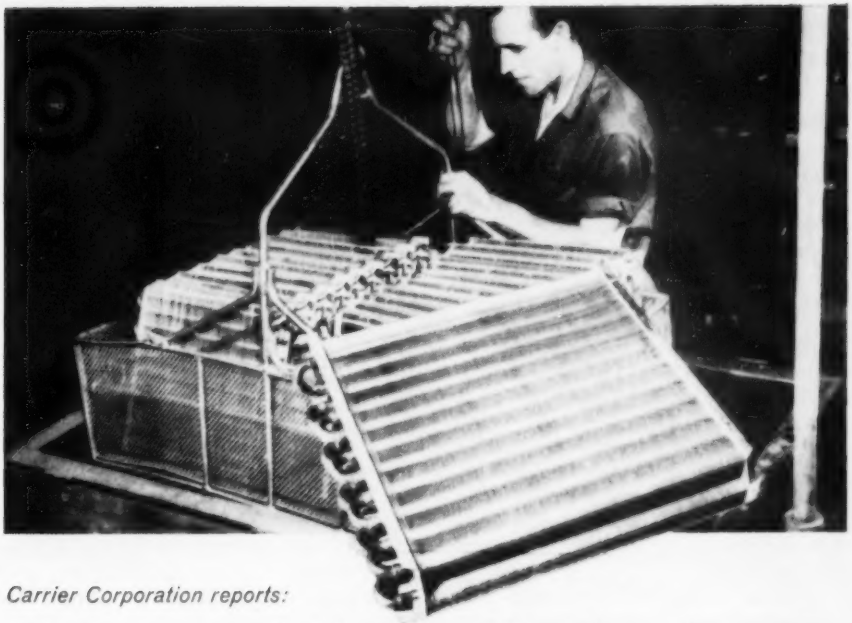
GIANT FORD DEGREASER
Courtesy Ford Motor Car Co., Detroit

Call on our engineering department for the latest in ULTRA-SONIC CLEANING.

Send for FREE CATALOG. Call your nearest Ramco engineer and have your metal cleaning equipment SERVICED AT NO CHARGE.

RAMCO EQUIPMENT CORP. Div. of Randall Mfg. Co., Inc.
811 Edgewater Rd., New York 59, N. Y. • DAyton 3-3900

For more data circle **216** on Reader Service Card



Carrier Corporation reports:

"Cleanouts extended from 4 to 10 weeks... fewer tests of solvent and less 'coking' on coils with TRICLENE® D"

TRICHLORETHYLENE

Carrier Corporation, Syracuse, N. Y., takes particular pains with the degreasing of its many-finned refrigeration and air conditioning condensers. Their quality and safety standards demand bright, thorough cleaning of the aluminum fins and copper tubing . . . no oil residue on the metal surfaces. To meet these high production standards, they use "Triclene" D as the solvent for their vapor degreasers.

Carrier reports: "The period between degreaser cleanouts has been extended from four to ten weeks." Further, there is "less 'coking' on coils and the necessity of constant checks of solvent pH is substantially reduced."

Heat, light, air, acids and aluminum chloride will not affect "Triclene" D with locked-in stabilizers. Yet this rugged solvent safely cleans even the most delicately machined surfaces... retains its original purity longer... gives brighter cleaning of metal, distillation after distillation. And it *costs* no more than ordinary solvents!

GET ALL THE FACTS on vapor degreasing. This new Du Pont book contains 42 pages of data, figures and illustrations . . . something on all the latest degreasing developments. A copy for your files will be sent to you without obligation—just clip and mail the coupon below.

TRICLENE® D
TRICHLORETHYLENE

DU PONT
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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department PF-12
Wilmington 98, Delaware

☐ Please send me a copy of your new vapor-degreasing booklet.
☐ Please have your representative phone for an appointment.

Name_____ Title_____
Company_____
Address_____
City_____ Zone_____ State_____

For more data circle **217** on Reader Service Card

placing agent, it lifts moisture from crevices to the surface, where it will run off. Used after water cooling or testing, it eliminates spotting. Froil has been found useful in safeguarding delicate micro-finished surfaces.

Applications may be made by brushing or wiping, by dipping or by spraying. Soiled metal surfaces should be precleaned with appropriate alkali cleaner, emulsion cleaner, or solvents before applying Froil.

For more data circle **20** on Reader Service Card

★ ★ ★

Electroless Plating Tank

Metal Processing Co., 41 Canfield Rd., Cedar Grove, Essex County, N. J., has introduced an electroless nickel plating tank.

The unit incorporates a hot water heating jacket surrounding a liner coated with a trifluorochloroethylene type plastic; continuous filtration; and gravity feed of chemicals for continuous

Lined tank for electroless nickel plating

Engineered for Extra Years of Trouble-Free Operation

WALKER
Selenium Rectifiers

You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.

These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.

You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write

THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

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TUMBLING CHIPS

PROCESSED LIMESTONE HONING CHIPS are excellent for producing a super fine finish on non-ferrous metals.

PROCESSED RED GRANITE ABRASIVE CHIPS are exceptionally well suited for developing a fast cut on ferrous metals.

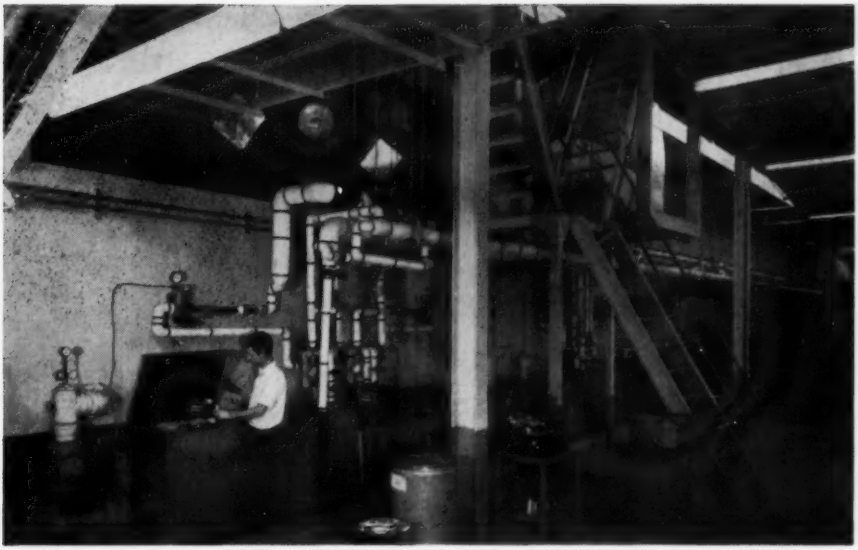
CHIPS IN 16 SIZES

FREE CATALOG AND CHIP SAMPLES FOR COMPARISON.

SAMPLE PARTS PROCESSED
Write or Call
VE 8-2071

UNIVERSAL TUMBLING SUPPLY CO.
14337 Mansfield **Detroit 27, Mich.**

For more data circle **219** on Reader Service Card



FAST, FLAWLESS FINISHING of range parts is automatic in this streamlined system designed and built by Koch. Products are conveyed through a six-stage phosphatizing machine and dry-off oven — proceed through flow-coat, flow-out and baking oven.

finishing SYSTEMS

Whether your production calls for a complete system or a pilot operation — for metal or wood products — Koch experts will show you how you can . . .

- **save money**
- **reduce waste**
- **improve production**

PHONE, WIRE OR WRITE TODAY!

DESIGNING | ENGINEERING
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- Dust and Fume Removal Systems
- Exhaust Systems
- Ventilating Systems
- Air Conditioning
- Finishing Systems

GEORGE
KOCH
SONS, INC.
EVANSVILLE 4, INDIANA
CHICAGO DETROIT

For more data circle 220 on Reader Service Card

operation. The 50-gallon unit is suited for basket or barrel operations when extremely thin plated coatings are required. Capacities up to 250 gallons are available.

For more data circle **21** on Reader Service Card

★ ★ ★

Aluminum Cleaner-Brightener

A cleaner recently announced by Apex Alkali Products Co., Main and Rector Sts., Philadelphia 27, Pa., is said to be useful in cleaning and brightening aluminum prior to finishing. The mildly alkaline solution has been particularly successful in cleaning and brightening aluminum fly screen, the manufacturer states, because the solutions have long life and produce a minimum of sludge.

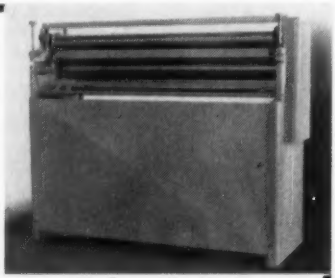
For more data circle **22** on Reader Service Card

"Tube-in-Strip" Heat Exchanger Tubes

Tube-In-Strip

A mill product in the form of a single strip, or sheet, of solid copper, brass or aluminum in which tubes are inflated to desired running lengths in a variety of shapes or sizes has been announced by Revere Copper and Brass, Inc., 230 Park Ave., New York 17, N. Y.

Designated as "Tube-In-Strip" the product is said to have immediate applications in the heat exchanger field, including refrigeration and air conditioning, chemical, food and petroleum processing, auto-



Cincinnati **PRECISION ROLLER COATER**

- SPEEDS PRODUCTION!
- SAVES LABOR!
- SAVES UP TO 50% ON COATING MATERIALS!

Now . . . economical production coating of cardboard, metal, plastics, and similar materials. For complete information, write

Cincinnati SCREEN PROCESS SUPPLIES, INC.

43 Walnut Street
Cincinnati 2, Ohio

For more data circle **221** on Reader Service Card

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

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Murray-Way's New #55 Head

GIVES YOU THESE POLISHING AND BUFFING ADVANTAGES:

GUARANTEED SPINDLES–Factory-tested spindles incorporate heavy-duty, anti-friction bearings that require no grease or oil and are sealed against dirt. GUARANTEED FOR 3 YEARS.

RIGHT OR LEFT HAND OPERATION–Simply invert the head assembly.

SMALL FLOOR SPACE–Heads will install in line on 5'8" centers–economize on floor space, conveyors and fixtures.

UNIVERSAL POSITIONING–By means of simple, accessible adjustment controls at the front of the head.

RUGGED–Heavy-duty workhorses–30 H. P. capacity.

FULL WORK CONTACT–Constant contact on irregular work shapes means–NO EXTRA PASSES–LOWER OPERATING COST–MORE PRODUCTION.

Production men who want a BETTER WAY . . . SPECIFY MURRAY-WAY

FOR COMPLETE INFORMATION WRITE

MURRAY WAY

MURRAY-WAY CORPORATION

P. O. BOX 180, MAPLE ROAD EAST · BIRMINGHAM, MICH.

Polishing, Buffing, Grinding, Filtering Equipment that automatically cuts your costs.

For more data circle 223 on Reader Service Card

mobile radiators, water heaters and coolers, gas heaters, radiant panel heating, and electronics, among others.

The product, which is made of one piece of metal only, incorporates within it expandable portions which can be inflated by the user into continuous running lengths of tube of whatever size and spacing or combinations of sizes and spacings might have originally been designated.

Except for the expandable portions, the metal is a solid strip of metal derived from a suitably treated casting. It is not two sheets of metal brazed, welded or rolled together.

The metal can be stamped or drawn into desired shapes prior to the expansion of the channels. The expanded channels can be made circular in section, or during the expansion operation the metal can be forced into dies for the purpose of producing other than circular sections.

It is also possible to inflate channels on one side of the strip or sheet only, leaving the other surface flat.

Tube-In-Strip can be furnished in long coils or in cut flat sheets in widths up to 16 inches at present and wider later, the determining factor being the size of the casting billet from which the product is rolled to its desired width or gauge.

Tube spacing can be as close as ¼ inch and even closer in some instances, and as wide apart as the width of the metal permits. Inside diameters of the tubes can vary from approximately 3/16 inch to ⅝ inch inclusive, when unexpanded. Tube wall gauge can vary from 0.0025 inch to whatever the inflation equipment permits.

Tube diameters can be varied within a single piece of metal — made all alike if desired, or with each adjacent tube of different size, or with one side flattened.

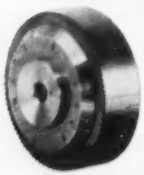
For more data circle **23** on Reader Service Card

★ ★ ★

Chromate Coating

Luster-on 52 Powder, a single-dip, no-leach conversion coating for zinc plated surfaces, has been announced recently by The Chemical Corporation, Springfield, Mass. It is formulated for use in automatic equipment where fa-

GARDNER SCRATCH THICKNESS GAGE



For measuring the dry thickness of coatings applied to any base such as WOOD, GLASS, METAL, PLASTIC, etc.
Write for description.

GARDNER LABORATORY, INC.
P. O. BOX 5728 PF
BETHESDA 14, MD.

For more data circle **224** on Reader Service Card

METABOND

MEANS *PROGRESS* IN RUSTPROOFING

METABOND is the only effective immersion or spray amorphous type zinc coating in the industry today.

METABOND withstands severe and consistent flexing and bending without chipping or breaking bond.

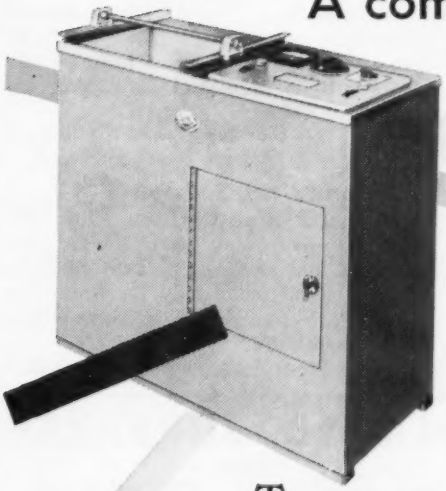
INTERNATIONAL RUSTPROOF CORPORATION
1575 MERWIN AVENUE • • • CLEVELAND 13, OHIO
MANUFACTURERS OF RUST PREVENTATIVES & CORROSION SOLVENTS

For more data circle **225** on Reader Service Card

Sel-Rex

Jet Plater

A complete, versatile small-volume plating unit



compact! portable! automatic!

The SEL-REX "JET" PLATER is a complete electroplating unit in a compact portable cabinet. Designed and built by electroplating specialists, the "JET" PLATER incorporates a built-in rectifier with timer and other automatic features for high speed, quality work, usually found in large, mass production plating installations.

VERSATILITY—The "JET" PLATER can be used for either rack or barrel plating operations . . . a perfect small-volume unit for decorative (precious metals) or functional electroplating.

CONSISTENT HIGH QUALITY RESULTS—Pump and perforated stainless steel tube at bottom of plating tank provides swirling "JET" agitation . . . the solution moves constantly around the work for smooth, even deposits, high precision results. Solution is continuously drawn off from the bottom of the tank, circulated through the pump and filter, and returned to the tank under pressure.

"CUSTOM" DESIGNED FOR PRECIOUS METALS—The "JET" PLATER is equipped with a replaceable cartridge type filter which provides continuous filtration for high speed operations . . . ideally suited to precious metals plating. Filter may be by-passed if only intermittent filtration is desired.

Available in standard tank capacities of 10, 20 and 30 gallon models. Larger capacities to specifications. Send for literature.

SEL-REX CORPORATION

Precious Metals Division

155 Manchester Place Dept. PF-12 Newark 4, N. J.

For more data circle **226** on Reader Service Card

cilities are not available for added leaching and rinsing.

It produces a bright bluish hue and provides protection against staining, tarnishing and white powder products, it is stated.

Luster-on 52 Powder is suitable for use on electrical conduit, conduit boxes, screws and builder's hardware, tools, electronic parts, air conditioning parts, automotive parts, and toys.

For more data circle **24** on Reader Service Card

★ ★ ★

Baking Enamel

An organic coating that is said to look and perform like porcelain enamel has been developed by the Pittsburgh Plate Glass Company, Pittsburgh 22, Pa.

To be known as "Duracron," this family of coatings is based on a recently developed series of thermosetting acrylic resins.

Although it is particularly adapted to the finishing of refrigerators, home laundry equipment and air conditioning equipment, Duracron's toughness, mar resistance, and durability are desirable for almost any application where a good baking enamel is specified, it is stated. The product possesses excellent adhesion to metal surfaces and primers, the manufacturer states.

It will be furnished in a complete range of colors.

For more data circle **25** on Reader Service Card

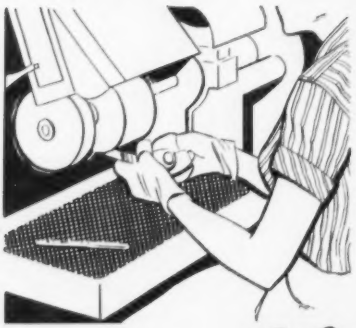
★ ★ ★

Degreasing Solvent

Immunol, a neutral, non-toxic, nonflammable solvent that cleans, degreases and rustproofs metal surfaces has been introduced by Harry Miller Corp., 4th and Bristol Streets, Philadelphia 40, Pa.

Mixed with hot or cold water, it car-

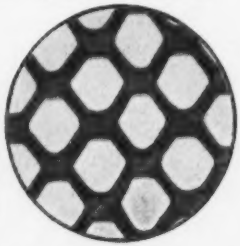
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



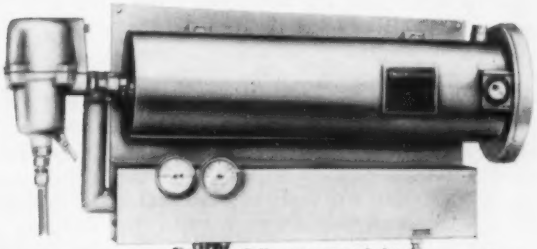
RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

For more data circle **227** on Reader Service Card

THERM-O-SPRAY HOT SPRAY UNITS

Trade Mark Reg. U.S. Pat. Off.



Fully approved by Underwriters Laboratory and N. Y. Board of Standards & Appeals

Type SPC-4N

—the leading Hot Spray Unit used all over the world

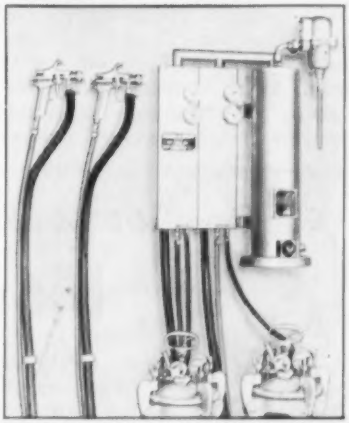
No pumps. No gaskets to leak. No overheating of paint. No moving parts. Use with any standard spray painting equipment--manual or automatic. Simple. Efficient, Troublefree.

The air used by the spray gun is electrically heated and in turn heats the paint. This process is fully covered by basic patents in U. S. and other countries. During spray interruptions the liquid hose is kept hot by circulation of hot air without use of pumps, which may wear out and leak.

For quick color changing, use Multi-Color Therm-O-Spray with 2 to 4 paint heaters. Special models available with 5 to 25 paint heaters.

For Cup Spraying, use the Thermo-O-Spray Cup Heater LFK.

Write for further information



THERM-O-SPRAY MULTI-COLOUR TYPE SPC-42/2

Type LFK Cup Heater

Reduce production costs—obtain better finishes!

THERMOSPRAY COMPANY, INC.

103 Park Avenue, New York 17, N. Y.

In Canada: Scandia Supply Co., Ltd., 376 Craig Street W., Montreal

ries off oils, soils or foreign matter, leaving a protective rustproof coating. Only a few ounces of the solvent per gallon of water are required to produce a gallon of solution, which can be used again after removing foreign matter.

Immunol can be used in vapor degreasing units; for improving alkali cleaners; as a rust preventive; for the final rinse after plating; for tumbling operations; and for general cleaning.

For more data circle **26** on Reader Service Card

★ ★ ★

Galvanize Primer

Metco, a product of Solfo Paint Mfg. Co., Dept. AM, Metco Div., Trenton 3, N. J., prevents paint, lacquer and enamel from peeling off galvanized metal. It is applied by brushing or dipping. Reaction on soldered joints is the same as on galvanized surfaces. In addition to preparing metal for painting, Metco can be used as a permanent finish by itself. The material is colorless, non-flammable and odorless.

For more data circle **27** on Reader Service Card

★ ★ ★

"Double-Side" Abrasive Belt Machine

Model 304C2 Double-Side Grinder, manufactured by the Curtis Machine Corporation, Jamestown, New York, incorporates a turn-over transfer unit between conveyorized abrasive belt heads. This version of the Curtis "Straight-O-Matic" machine will grind, polish or deburr both sides of a workpiece in one handling of the stock. The turn-over mechanism allows grinding and polishing of pieces of different sizes and shapes. It can be engineered to accommodate practically any piece, the manufacturer states.

... CUT CLEANING COSTS WITH TECT'S

Model 22 Solvent Vapor Degreaser

For safety engineered cleaning TECT's compact Solvent Vapor Degreaser offers low initial installation cost and economical operation.

This versatile unit cleans approximately 250 lbs. of metal per hour in pure solvent vapor.

VITAL STATISTICS

Outside Diameter:	32.5 in.
Height:	37.5 in.
Outside Diameter of Tank:	23.5 in.
Work Clearance:	21 in.
Basket Diameter:	18 in.
Solvent Capacity:	13 in.

Larger sizes available

SAFETY

Minneapolis-Honeywell Safety Thermostat shuts off electricity if solvent vapors rise above the condenser, due to failure of water supply or inadequate volume of water.

Chromalox Thermostat for heating elements shuts off electricity when machine requires draining of sludge or if more solvent is needed.

Only $259.00

f. o. b. Dumont, N. J.

(Subject to change without notice)

ANOTHER PRODUCT OF TECT, INC. DUMONT, N. J.

AMERICA'S MOST COMPLETE LINE OF SAFETY SOLVENTS

For more data circle **229** on Reader Service Card

new, fast, ALKALINE *De Ruster* #2

Does not attack ferrous metals
Non toxic
Economical
No hydrogen embrittlement
No dimensional changes
Also removes paints, oils

Alkaline De Ruster No. 2 is the new Mitchell-Bradford non-electrolytic compound for removing rust quickly from ferrous metals. Since it concentrates its action on the rust itself, it produces no dimensional changes yet leaves the surface not only clean but without the tendency to re-rust.

Alkaline De Ruster No. 2 contains no dangerous acids, produces no harmful fumes. This eliminates the risk of hydrogen embrittlement and produces a surface ideal for subsequent finishing processes such as plating, phosphating, black oxidizing, etc. Alkaline De Ruster No. 2 is used in various concentrations in water of 180° to boiling. It is economical, safe to use, completely dependable. Write us about your rust removal problem!

Mitchell-Bradford

MITCHELL-BRADFORD CHEMICAL CO.
WAMPUS LANE MILFORD, CONNECTICUT

QUALITY PRODUCTS OF CHEMICAL RESEARCH

For more data circle 230 on Reader Service Card

It uses abrasive belts 4 inches wide and 54 inches long, and incorporates a 1½-h.p. motor and two ¼-h.p. infinitely variable-speed conveyor drives.
For more data circle **28** on Reader Service Card

★ ★ ★

Pressure-Sensitive Tape

A pressure-sensitive tape developed primarily to reduce the sound level inside aircraft has been announced by Minnesota Mining and Manufacturing Co., Dept. J6-3, St. Paul, Minn.

Tape No. 435 is a laminate of two layers of aluminum foil coated with a specifically compounded long aging adhesive. Its backing has been surface conditioned to reduce roll unwind effort and facilitate application.

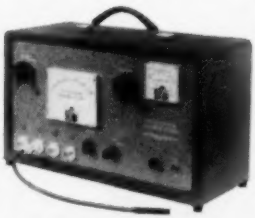
The tape is expected to find widespread vibration damping applications in the aircraft industry.

In addition, it may have application possibilities in the automotive industry, and by various fabricators of light metals faced with the problem of overcoming noise and vibration in their finished product.

No. 435 tape is available in 60-yard rolls in widths from ¼ to 34 inches.
For more data circle **29** on Reader Service Card

Pressure-sensitive tape is useful for reducing the sound level inside aircraft

Telephone collect for free brochure on
STRIPPING COPPER
with
McKeon's "Liquid Sulphur"
Economical, fast, non-electrolytic.
Sulphur Products Co., Inc.
McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.
For more data circle **231** on Reader Service Card

DERMITRON
NON-DESTRUCTIVE THICKNESS TESTER
FOR METALS ON METALS • NON-CONDUCTORS ON METALS • METALS ON NON-CONDUCTORS
Fast • Accurate • Compact • Portable • Direct Reading
Write for Full Information

UNIT PROCESS ASSEMBLIES, INC.
61 EAST FOURTH ST. • NEW YORK 3, N. Y.
For more data circle **232** on Reader Service Card

LOW COST PRODUCTION AND HIGH QUALITY WITH SLY CONVECTIONEERED OVEN

Drying oven with silhouette plates removed to show interior of oven. Baking oven is directly behind the instrument panel cabinet.

In order to meet the increased demand for its products, a prominent fan and blower company recently renovized its metal products finishing department.

The company installed two Sly Convectioneered Ovens: (1) a water dry-off oven — 24'-8" long, 9' wide, 8' high — to remove the moisture from the parts after leaving the washer and (2) a paint baking oven — 64'-8" long, 9' wide, 8' high — located adjacent to the dry-off oven.

Both ovens have the same basic design and differ only in length and heater capacity.

Automatic temperature and safety controls are part of the air heater equipment and protect the systems against flame, fuel, power, or mechanical failure. Actual runs show that from a room temperature of 70° F. a temperature of 350° F. is achieved in 12 minutes and maintained uniformly. Both drying and baking ovens are set up for 8-minute cycles.

Results of this installation: production materially increased and better finishes obtained, at very substantial savings! *May we discuss your requirements with you?*

Designers and Manufacturers of Dust Control Systems — Blast Cleaning Equipment — Tumbling Mills — Industrial Ovens.

THE W. W. SLY MANUFACTURING CO.

SINCE 1874

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 233 on Reader Service Card

Black Finish

The Conversion Chemical Corporation, 102 E. Main St., Rockville, Connecticut, has announced a dull black finish for zinc die castings. Known as Kenvert No. 11-B, it improves corrosion resistance when applied over the appropriate conversion coatings for the metal to be finished.

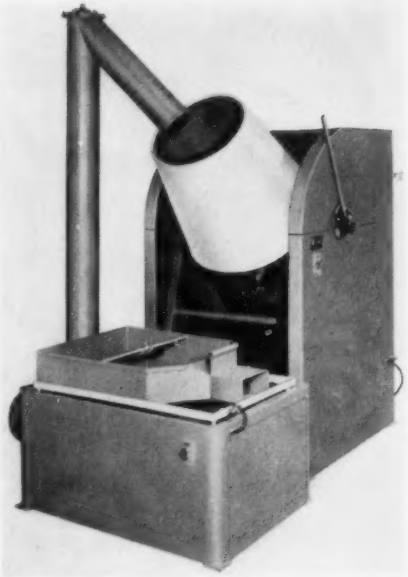
This coating is designed to produce a uniform, dense black finish on zinc, cadmium or zinc-base die castings. The process involved is fast, can be conducted at room temperature, requires no exhaust equipment, and is suitable for use in automatic machines, the manufacturer states.

For more data circle **30** on Reader Service Card

★ ★ ★

Hot Sawdust Dryer-Polisher

A Hot Sawdust Drying and Polishing Unit has been announced by Speed-D-Burr Corp., 3613-A San Fernando Rd., Glendale 4, California.



Speed-D-Burr's Hot Sawdust Dryer-Polisher

It is available in three models (deluxe, standard and economy). Each of these units may be ordered separately as a barrel unit only, as a barrel unit with elevator refill, or as a barrel unit with standard mechanical separator.

The barrel is the same for all models and is heat jacketed. Dimensions are 24 by 24 inches. Capacity is five cubic feet. The units are powered by a ¼-h.p., 110-v., single-phase gear motor with switch and gas venturi. On special order, increased horsepower, and/or 3 phase, 220/440 motors are available.

The Deluxe Elevator Refill may be used with any of the three models or purchased as a separate accessory. This unit comes complete with top parts pan, a pneumatic vibrator separator, bottom storage pan and screw

PRODUCTS FINISHING directory

source book for:

EQUIPMENT
MATERIALS
PROCESSES

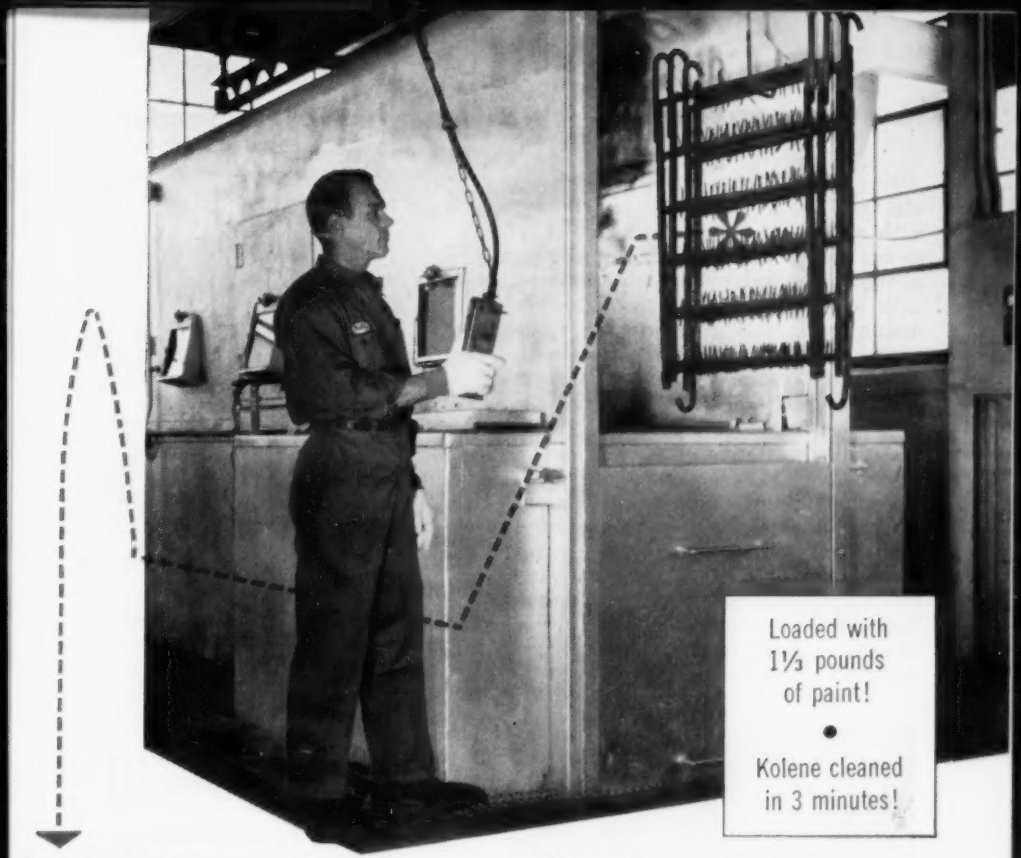
used in the Finishing Industry—

Electroplating,
Paint Finishing,
Porcelain Enamel,
Vacuum Metalizing.

PRODUCTS FINISHING directory—

For more data circle **234** on Reader Service Card

For more data on advertisement on opposite page circle **235** on Reader Service Card——→



* Hooks, racks, or "rejects" stripped clean of paint in 5 seconds to 4 minutes!

Now you can abandon costly hit-or-miss methods of paint stripping. Install a Kolene unit to place the paint stripping operation in its proper relationship to other modern operations in your plant. Engineered by us for batch cleaning (shown above), or for continuous, fully automatic conveyor systems. Clean, safe and easy to operate, the Kolene process conserves man hours and materials, strips large or small hooks and racks clean in 5 seconds to 4 minutes! Strips rejects clean for repainting in a matter of seconds! *Used by leading manufacturers!* Write for details!

KOLENE® CORPORATION
12890 WESTWOOD
DETROIT 23, MICHIGAN

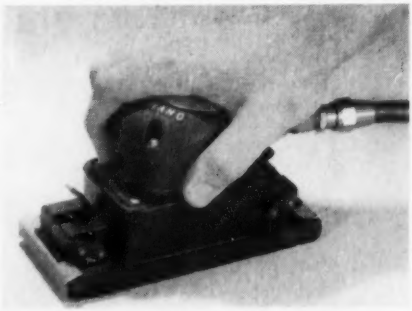
elevator for automatic barrel filling, with a ½-h.p., 110-v. single-phase motor and switch. The Standard Mechanical Separator may be purchased as a separate unit or may be used in conjunction with any of the three models. This unit comes complete with top parts pan, pneumatic vibrator separator and bottom sawdust storage bin. A complete line of door accessories is also available as are the bound screens, which are available in screen sizes of 1/32-inch steps up to 2 inches.

Completing the hot sawdust line of equipment is the Mity-Mite Hot Sawdust Unit that is supplied with top parts pan, bottom storage and handling pan for separation with an enclosed cabinet. The barrel is heat jacketed. Capacity: 1.2 cubic feet.

For more data circle **31** on Reader Service Card

Lightweight Air Sander

A lightweight orbital sander (Model 800) weighing only 3 pounds and fitting into the palm of the hand has



Sundstrand's Compact Model 800 Air Sander

been announced by the Pneumatic Division, Sundstrand Machine Tool Co., Rockford, Ill. The high-speed unit operates on 6,000 cycles for fast ma-

For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, California*
Standard of the Finishing Industry Since 1934

For more data circle **236** on Reader Service Card

FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average 'ongevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

5204 Harvard Avenue
Cleveland, Ohio

For more data circle **237** on Reader Service Card

the KLEM representative

— *he's in your area to help you*

The next time the KLEM man calls at your plant take advantage of his specialized experience and training in metal surface cleaning and preparation. If you have a problem he may be of help to you on the spot, if not he'll use the KLEM-PLAN to present the facts to our lab technicians who will find a quick answer for you.

KLEM CHEMICALS INC.

Dearborn, Michigan
14401 Lanson Ave.

Elmonte, California
1950 No. Central Ave.

WRITE FOR THE KLEM CATALOG, TODAY

For more data circle 238 on Reader Service Card

terial removal. Model 800 operates at 40 p.s.i. air pressure. Air consumption is 5 to 7 c.f.m.

Palm lever control makes the unit useful in restricted areas. It can go just about anywhere the hand can reach, the manufacturer states. It is designed to be able to sand close to edges and moldings.

Despite its small size and light weight, this air sander has the ability to remove material in volume and is suitable for rough sanding and preliminary operations. The sander can be used for wet sanding if a separate supply of water is provided.

Model 800 takes a 3 by 8-inch sheet of sandpaper.

For more data circle **32** on Reader Service Card

★ ★ ★

Chemical-Resistant Paint

A paint that withstands a wide range of acids, alkalies, greases, oils, and solvents has been introduced by the Sealube Co., Wakefield, Mass.

Called Metaz, the epoxy-based paint is suitable for use on metals, wood and other surfaces. It is said to have excellent abrasion resistance.

It is available in black and white and other colors consistent with good chemical resistance.

Technical details and samples are available from the Sealube Co., Wakefield, Mass.

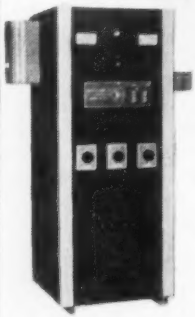
For more data circle **33** on Reader Service Card

★ ★ ★

Flat Finisher

A flat finisher designed for wet abrasive belt grinding, polishing and deburring of flat work such as strip, sheets, bars, stampings and plates, has

GERMANIUM
rectifiers



- SEALED JUNCTIONS
- COMPACT
- LONG LIVED

Catalog available on request

95% Efficiency at full load is standard with the new RAPID GERMANIUM RECTIFIERS.

RAPID ELECTRIC CO.
2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

For more data circle **239** on Reader Service Card

POCKET **HANDI-GAGE**

A MAGNETIC THICKNESS TESTER

for electrodeposited, hot-dipped and painted coatings on steel. No bigger than a fountain pen, but what a job it does! Tests plated, painted, enameled, or plastic laminated coatings in SECONDS—in the lab or on the production line. Accurate, quick and easy to use.

WRITE FOR FULL INFORMATION

59 EAST 4TH STREET — NEW YORK 3, N. Y.

Plater's Research Corporation

For more data circle **240** on Reader Service Card

No SPECIAL HANDLING REQUESTED

This means new business for somebody. It could be you.

Because vacuum-metallized pieces now can "take it," thousands of products will, for the first time, be finished this new way.

More durable lacquers now protect the superb finishes only vacuum metallizing can produce at low cost. New lacquers and resins now stand up to rigorous abrasion tests and exposure to salt spray and high humidity.

Vacuum metallizing is sure to grow rapidly. New business is waiting for you.

At CEC, we are ready to help you with a full range of vacuum coaters, headed by a large 48″ model for metallizing large pieces fast and at low cost.

We'll be glad to send you bulletins on our line of coaters, and share our experience in helping you set up operations.

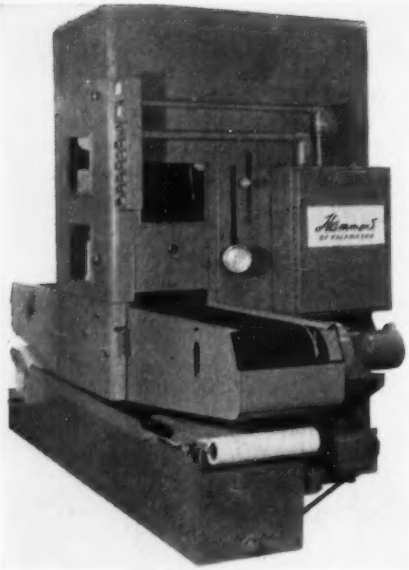
Consolidated Electrodynamics

Rochester Division, Rochester 3, N. Y.

formerly Consolidated Vacuum

NATIONWIDE COMPANY-OWNED SALES AND SERVICE OFFICES

For more data circle **241** on Reader Service Card



Hammond Conveyor-Type 12-inch Flat Finisher

been introduced by Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich. It will accommodate work up to 12 inches wide and 6 inches high.

Continuous feeding of work is accomplished with a variable-speed air-tensioned conveyor.

The head of the machine is of the two-roll design, and uses an abrasive belt 12 inches wide and 126 inches long. It consists of a large-diameter air-tensioned tracking idler pulley, a heavy dovetail slide for work height adjustment and a contact roll driven by a motor of 25 h.p. maximum.

Other features and optional equipment include power elevation for head adjustment to the work, 6 to 10-inch-diameter contact rolls, adjustable work-hold-down rolls, magnetic conveyor platen, and automatic coolant filter.

For more data circle **34** on Reader Service Card

★ ★ ★

Graphite Heat Exchangers

Impervite tube and shell heat exchangers are now made in standard 14 and 16 foot lengths, Falls Industries, Aurora Rd., Solon, Ohio, has announced. These exchangers are produced from stocked component parts in sizes up to 650 tubes.

The complete range of standard lengths now includes 3, 6, 9, 12, 14 and 16 feet.

Impervite exchangers consist of a steel shell, which houses a bundle composed of non-porous, graphite tubes. Where required, shells can be supplied in special alloys, Haveg, impervious graphite, or they can be lead or rubber lined.

Impervite tube and shell heat exchangers resist the action of most cor-

"YOUR FIRST LESSON"

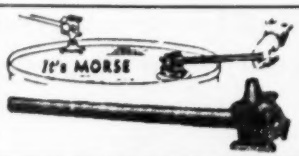
"I have been working in a plating shop for the past four years and I must admit I have picked up more technical information from your first lesson than I have in the past four years," writes plater John Dudley of Worcester, Mass. You too will find this unique home study course a gold mine of information in an easy to understand way. Write for free details today! JOSEPH B. KUSHNER, ELECTROPLATING SCHOOL, STROUDSBURG, 10F, PA.

For more data circle **242** on Reader Service Card

Send NOW for this FIT-ALL

DRUM PLUG WRENCH

Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



THOUSANDS IN USE saving time, labor, accidents!

SATISFACTION GUARANTEED..... **$3.80**

Non-sparking type $5.90

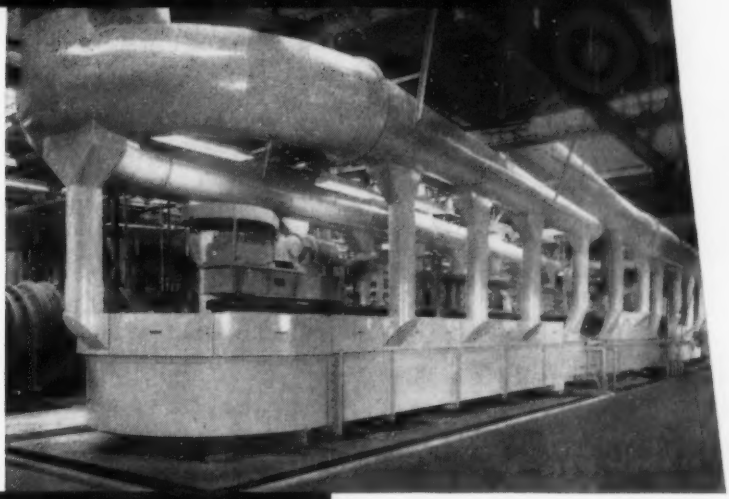
Plus Parcel Post

MORSE MFG. CO., Inc.

762 W. Manlius St., E. Syracuse, N.Y.

For more data circle **243** on Reader Service Card

KIRK & BLUM FUME CONTROL SYSTEMS
protect personnel and equipment



Saves 5 Ways...

1. Reduces Air Volume • 2. Lowers Maintenance Costs
3. Cuts Replacement Costs • 4. Improves Working Conditions
5. Eliminates Damage to Equipment

Many manufacturers throughout the nation rely on fume control systems engineered, fabricated and installed by KIRK & BLUM to protect personnel and equipment from damaging fumes.

In this installation the fumes are picked up at the outer periphery of the tank. Therefore, only clean air passes over the centrally located conveyor and plating equipment.

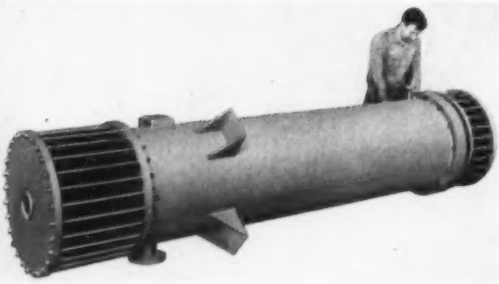
A KIRK & BLUM fume control system will soon prove itself with substantial savings in operating costs, as well as increasing life of vital equipment.

Write for Booklet "F" showing typical installations.

The KIRK & BLUM MFG. CO., 3116 Forrer Street, Cincinnati 9, Ohio

KIRK & BLUM FUME CONTROL SYSTEMS

For more data circle **244** on Reader Service Card

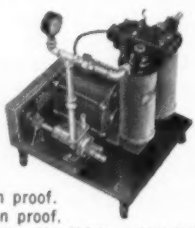


Graphite Heat Exchanger: 14-16-foot lengths

rosives except a few strong oxidizing agents. The manufacturer also states that Impervite is virtually immune to thermal shock, and possesses a high rate of thermal conductivity.

NEW Sethco FILTER PUMP
double cartridge self-priming
1-3 Gal./Min.

Model **CCGIE-120**—rated 1-3 gals. per min. for continuous filtration of solvents, lacquers, paints and all types of Product Finishing solutions.
FILTER ASSEMBLY: Double cartridge equipped with pressure gauge.
PUMP: Self-priming gear with relief valve set at 35 p.s.i.
MOTOR: ¼ H.P., explosion proof.
SWITCH: Manual, explosion proof.
PANEL: Bakelite, 14" x 16" x ½" thick; swivel ball bearing, rubber tire casters.
HOSE: two 10' lengths, solvent resistant, inlet strainer.
50' Electric Cable.
DIMENSIONS: 14" x 16" x 6" high, Wt. 65 lbs.



Sethco Mfg. Co.
70-72 Willoughby St., Bklyn. 1, N. Y. • ULster 5-8940

For more data circle **245** on Reader Service Card

The longer lengths use less space for a given amount of heat transfer surface, and also increase the number of increments of transfer surface available as standard.

For more data circle **35** on Reader Service Card

★ ★ ★

Organic Sequestrant

Monitor A, an organic sequestrant and solubilizer recommended for use in metal cleaning solutions and plating baths, has been introduced by Globe Compound Co., Inc., Waterbury-Bristol Rd., Waterbury 12, Conn.

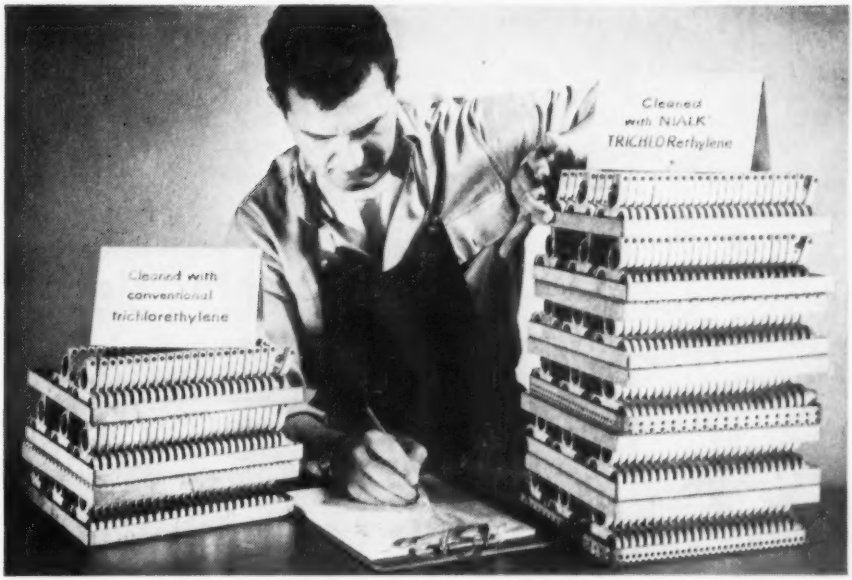
Monitor A is a liquid sequestrant, solubilizer and chelating agent for di-, tri-, and tetra-valent metallic ions. It is effective over the entire pH range, from acidic to strongly alkaline solutions. It has little effect upon surface tension and is non-foaming by itself.

This material is a useful ingredient in alkaline metal cleaning solutions, especially where difficulty is encountered in removing buffing compounds. It also aids in tarnish removal, the manufacturer states. The solubilizing and sequestering properties of Monitor A help to improve etching solutions and caustic cleaners. Trivalent cations such as iron, chromium and aluminum are completely soluble in these solutions. Caustic soda solutions containing Monitor A dissolve stannous oxide and stannous salts to produce soluble stannite solutions.

As an additive to plating baths, this solution sequesters various metallic ions and contaminants present. It is also helpful as a brightener in metal and abrasive polishes, the manufacturer states.

Monitor A is useful in removing scale, rust and black oxide in neutral, acidic and alkaline solutions, and is said to be beneficial in electrolytic cleaning solutions.

For more data circle **36** on Reader Service Card



Operator using NIALK TRICHLORethylene cleans more parts, because NIALK has **psp**, which prevents acid contamination, reduces number of cleanouts.

Why you get **more effective degreasing**

when you use NIALK® TRICHLORethylene with **psp**

There's a big, cost-cutting difference between NIALK TRICHLORethylene and conventional vapor-degreasing solvents.

Light, heat, air, acids, and active metals such as aluminum can break down improperly stabilized solvents, making them unfit for further degreasing.

Nialk stabilizer has psp—permanent STAYING power. You *never* have to replenish the stabilizer in NIALK TRICHLORethylene. It's neutral, non-alkaline, works equally well with *all* metals.

psp means cheaper degreasing. Even after repeated distillations, this unique NIALK stabilizer actively retards the formation of degradation products in your bath.

You don't have to clean the bath so often. You can degrease more parts between cleanouts.

Get proof of Nialk's cheaper, safer cleaning. Write on your business letterhead for a revealing resumé of comparative metallurgical tests made on NIALK TRICHLORethylene and four other leading brands.

HOOKER ELECTROCHEMICAL COMPANY

1412 Union Street, Niagara Falls, N. Y.

Niagara Falls • Tacoma • Montague, Mich. • New York • Chicago • Los Angeles

HOOKER CHEMICALS PLASTICS

Manufacturers of VIRGO® DESCALING SALT, VIRGO ELECTROLYTIC SALT, VIRGO MOLTEN CLEANER 6.1615

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to keep baths clean

most electroplaters choose

RED LABEL DARCO®*

For these very good reasons:

Only Darco activated carbon wets so quickly . . . ends carbon dust problems.

Only Darco gives such long filter cycles, needs so little labor and time for dumping filters.

Only Darco is developed and made especially for the plating trade . . . by specialists who know the plater's problems through many years of close association.

Only Darco is available everywhere for prompt delivery through a nationwide network of distributors. Call the source nearest you** . . . and be sure always to ask for DARCO by name!

*Made exclusively for the Plating Industry.

**We'll be glad to forward the names of the distributors nearest to you.

DARCO IS MADE BY

Chemicals Division

ATLAS POWDER COMPANY

Wilmington 99, Delaware

Atlas Powder Co., Canada, Ltd., Brantford, Ontario, Canada

For more data circle **247** on Reader Service Card

Try Wyandotte's winning combination!

1. Technical Service – Factory-trained representatives, quickly available when needed; backed by factory specialists for a prompt solution to your problem . . . and kept up to date on latest metal-finishing practices.

2. Research – Extensive, modern facilities, including: pilot multi-stage spray washer, complete pilot-plating line, nuclear studies for Cleaner Research (in which we have pioneered). All staffed with experts – the best in the industry!

3. Service Aids – Technically correct instruction sheets, control charts, testing equipment furnished without additional charge.

4. Background – Over 50 years' experience in specialized chemicals assures you of the best products, methods.

Why don't you, too, try Wyandotte for:

• Metal Cleaners • Paint-Preparation Products • Barrel-Finishing Compounds • Paint Removers • Aluminum Specialty Products • Neutralizers • Rust and Scale Removers • Rust Preventatives

When you buy from Wyandotte, you not only get the finest in chemical products, but many other extra benefits, as well!

You get Wyandotte's capable technical service, extensive research, helpful service aids, and vast experience in metal finishing – a combination that means better results at lower cost for you. Contact us today! *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

Wyandotte
CHEMICALS
J. B. FORD DIVISION

THE BEST IN CHEMICAL PRODUCTS FOR METAL FINISHING

For more data circle **248** on Reader Service Card

Page 134

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . societies

NEW PLANTS

The boards of directors of **Pennsalt Chemicals** and **Delco Chemicals, Inc.,** Los Angeles, have approved a plan under which Pennsalt will acquire Delco, Pennsalt president William P. Drake has announced.

With a new main plant and office located in Los Angeles and another recently constructed plant at Dallas, Texas, Delco's major activities are the manufacture and sale of organic and inorganic specialty cleaning and paint stripping compounds.

Following transfer of ownership and control, Delco's operations will continue under the direction of its president, Lyle Harbour, and its vice president and general manager, A. F. Slover, and their associates.

★ ★ ★

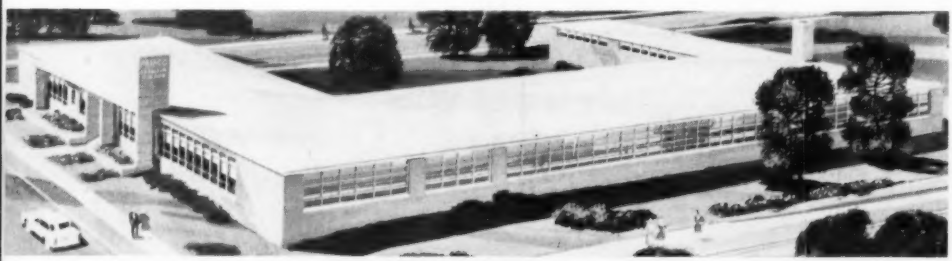
Pemco Corporation has announced that construction of a new building to house the Research and Development Laboratories will begin in the near future. The one-story building, which will be constructed on a hill east of the main plant on Eastern Avenue in Baltimore, Md., will have three times the space now occupied by the Research and Development Laboratories.

Floor space will encompass 22,000 square feet. In addition to numerous laboratories, the buildings will have offices, conference rooms, a large library and will be air-conditioned.

★ ★ ★

Norton Company has acquired a controlling interest in Abrasivos Irmaos Meyer, S. A. of Sao Paulo, Brazil. This firm manufactures coated abrasives, grinding wheels, and abrasive grain. The announcement was made by A. Donald Kelso, vice president in charge of Norton's foreign operations and president of Norton Behr-Manning Overseas, Inc.

The plant will continue to be operated by Irwin, Frederico and Paul Meyer, who began the business in 1939.



Architect's perspective of new home for Pemco Research Division in Baltimore, Maryland

Establishment of a Controls Division, to manufacture and distribute a diversified line of "package" industrial controls for functions that can

R. A. Moenich

David J. Dolan

be measured electrically, has been announced by the **Tipp Manufacturing Co.**, Tipp City, Ohio.

Field sales problems involving the new line of controls will be handled by **David J. Dolan. R. A. Moenich** has been named chief engineer of the Controls Division.

The complete line of Tipp package controls is a broader application of the Tipp-Tronic safety controller, used mainly with conveyor systems.

★ ★ ★

Croname, Inc., has announced that construction of the company's new factory and office building in Niles, Ill., will begin in the near future.

Announcement of plans was made by Lester R. Gasper, president of the 53-year-old Chicago firm.

Croname, Inc., manufactures nameplates and decorative metal parts for automotive, appliance, radio and television industries and numerous other products such as printed circuits and decorative glass.

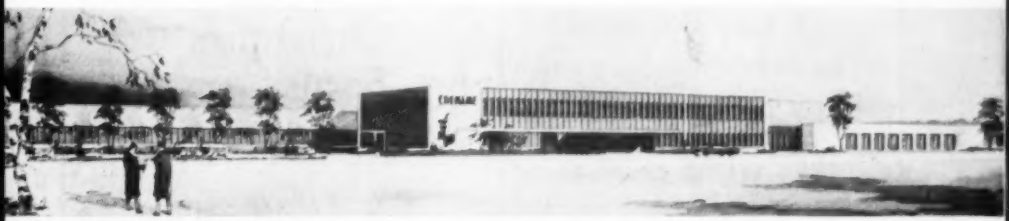
COMPANIES

Greater research devoted to the selection and development of finishes for specific industrial maintenance applications has resulted in "engineered coatings for industry," an expanded program of engineered finishing systems, according to A. D. Duncan, vice president of **The Glidden Company** and general manager of the Paint and Varnish Division.

Recognizing the complexity of anticorrosive and highly specialized industrial coating problems, the Industrial Paint Division has devised a questionnaire for use by industry.

Industrial customers are queried on the various conditions to be met by maintenance finishes in their individual plants. The completed questionnaire is forwarded to the Glidden laboratories, where technicians evaluate the problem or problems to be overcome and recommend a suitable Glidden finish.

New developments in all fields — chemical, manufacturing, transportation, oil refining and the like—have resulted in the definite need for a program such as that developed by Glidden: Engineered coatings for industry, Mr. Duncan concluded.



Perspective of new factory and office building to be built for Croname, Incorporated.

The formation of a new Regional Sales Organization for **Kelite Corporation** has been announced by William Sorensen, executive vice president and director of marketing.

The United States is now divided into four sales regions: Western, Southern, Midwestern and Eastern. These four regions will be headed by the following regional sales managers: R. J. Racine at Los Angeles; A. F. Rotoli at Dallas; A. W. Lupien at Chicago; and W. J. Hennessy at Jenkintown, Pennsylvania.

★ ★ ★

More than 500 Lowe Brothers employees and friends attended a testimonial dinner on October 30, at the Biltmore Hotel in Dayton, Ohio, to honor **Donald A. Kohr,** who has retired as chairman of the board of **Lowe Brothers Co.,** after 55 years of continuous service.

Special guests included Arthur W. Steudel, president, and Dr. N. E. Van Stone and S. B. Coolidge, Jr., vice presidents, all of the Sherwin-Williams Company. Also present were William M. Stuart, president of Martin-Senour Company; W. J. Jenkins, president, John Lucas and Company; Gordon H. Robertson, vice president, Acme Quality Paints; and George A. Martin, Jr., president, W. W. Lawrence and Co.

Quality Control through

"pH PAPERS"

Accurate pH Values in a few seconds

Indicator AND control - colors on SAME strip. Control-colors in steps of 0.2 pH and 0.3 pH. Sensitively 0.05 pH.

SAVE TIME AND MONEY

ENTIRE pH RANGE FROM 0.4-14.0 pH COVERED BY A SERIES OF SHORTER RANGES.

PAUL FRANK

118 East 28th St. NEW YORK 16

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Buy and use Christmas Seals...

Fight Tuberculosis!

HAMMOND MODEL VRRO
Two-Spindle Variable Speed Lathe

STEP UP PRODUCTION — REDUCE FINISHING COSTS with Hammond DOUBLE SPINDLE LATHES

- No "down time" for one operator when the other changes wheel — each operator has his own motor, control and variable speed drive.
- Convenient Variable Speed dial is within arm's reach of the operator — no "climbing" around in back to change speeds.
- Wheel economy and better finish. As wheel wears each operator can increase speed — to maintain constant peripheral speed for uniform and better finish, maximum production and wheel life.
- Available in 3 sizes — two 5 HP, two 7½ HP or two 10 HP.

ALSO AVAILABLE IN WIDE SWING MODEL VRROW

Wide swing construction, with extended bearing housings and spindles, provides additional working space for large, bulky pieces.

Cost reduction is the need of the day — Write for catalog.

Hammond OF KALAMAZOO "Good Machinery Since '82"

Hammond Machinery Builders Inc.

1622 DOUGLAS AVE. — KALAMAZOO, MICHIGAN

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Mr. Steudel presented Mr. Kohr with a scroll commemorating the occasion on behalf of fellow board members of The Sherwin-Williams Company. Edwin A. Daniels, Lowe Brothers president, gave him a leather bound brochure recounting his long career.

Mr. Kohr joined Lowe Brothers as a chemist in 1901, became assistant superintendent in 1906 and general superintendent six years later. He was elected a director in 1916 and general manager in 1920. After serving as secretary and vice president he was elected president in 1927 and elevated to chairman of the board in 1954.

★ ★ ★

Significant new techniques in the coated abrasive grinding and finishing of metals were demonstrated at **Behr-Manning's National Metalfinishing Conference,** held Oct. 29-Nov. 2 at the abrasives manufacturer's clinic rooms, 4101 West 150th St., Cleveland, Ohio. Some 3,000 production men from all phases of the metalworking industry and all parts of the country attended. Purpose of the exhibit was to provide a clearing house of information and education on the many new developments in a technology which is expanding rapidly. The exhibit consisted of nearly 100 machine tools and metalworking machines, most of them developed within the past two years and many shown for the first time. They were the products of 34 manufacturers who were guests of Behr-Manning.

First day of the event was devoted exclusively to editors of the metalworking and business press. Throughout the remainder of the week, the show was open to industrial pro-

Behr-Manning Metalfinishing Show . . .

This conveyorized Hammond Flat Finisher is designed for the wet abrasive belt grinding, polishing and deburring of flat stock.

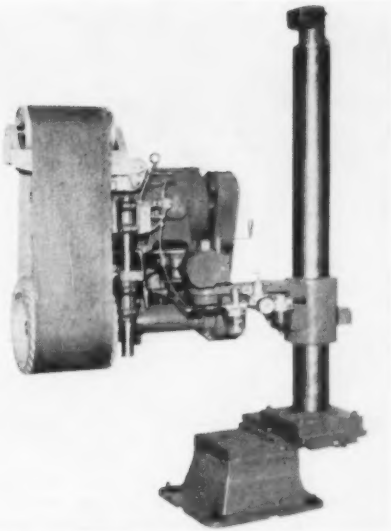
Sundstrand Twin Pad Sander being used to wet sand primer before applying finish coat on a steel control panel for a utility company.

METALFINISHING MACHINES ON DISPLAY . . .

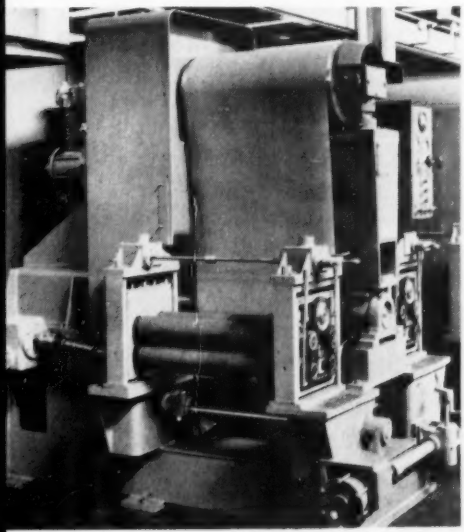
duction men. Scores of them brought actual workpieces for comparative testing on new equipment which ranged from huge automatic machines destined for automobile and appliance production lines, to small specialty tools for such exacting work as removing defects from the contoured surfaces of jet engine blades.

Specialty machines developed for grinding and finishing aircraft and engine components accounted for the presence of representatives from several West Coast plants. One of the largest automobile companies assigned its abrasives technicians to a two-day stay at the show, and a Rochester, N. Y., distributor underwrote the trip for customers who filled two railroad cars.

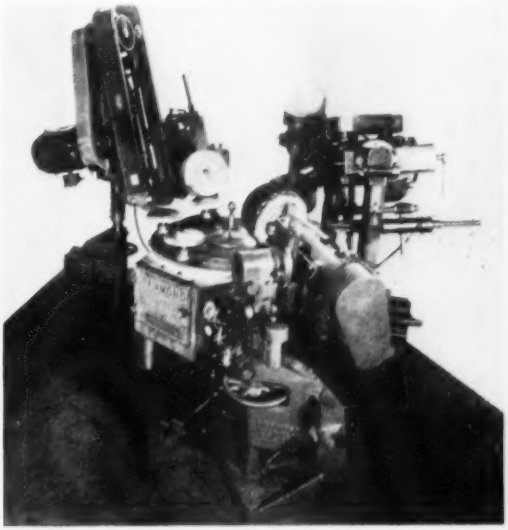
Features of the show included lec-



This Acme 12-inch Special Belt Head has air tensioning and automatic belt tracking. It will use belts even wider than twelve inches.



With guards and housings off, drive mechanism of Hill Acme pinch roll type abrasive belt grinding and polishing machine is shown.



Hammond Rotary Automatic setup uses K-34 Rotary Automatic Turret, around which is a variety of buffing and polishing heads.

Thin, flexible "leaves" of coated abrasive used for this Grind-O-Flex Wheel make it well suited for polishing grooves like these.

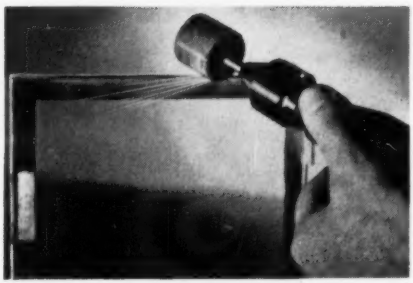
BEHR-MANNING METAL-FINISHING EXHIBIT . . .

ture-demonstrations by Behr-Manning Co. scientists and engineers, and the showing of a new color film on the uses of abrasive discs in metal-working.

LIST OF EXHIBITORS . . .

Abrasive Machinery, Inc.
Acme Manufacturing Company
Aro Equipment Corporation
B & E Manufacturing Co.
Stephen Bader & Company
Black & Decker Mfg. Co.
Buckeye Tools Corporation
Bush Manufacturing Company
Chicago Pneumatic Tool Co.
Chicago Rubber Company, Inc.

Air-powered vertical sander, a product of Buckeye Tools Corp., spins coated abrasive disc at 6000 r.p.m. to finish this part.

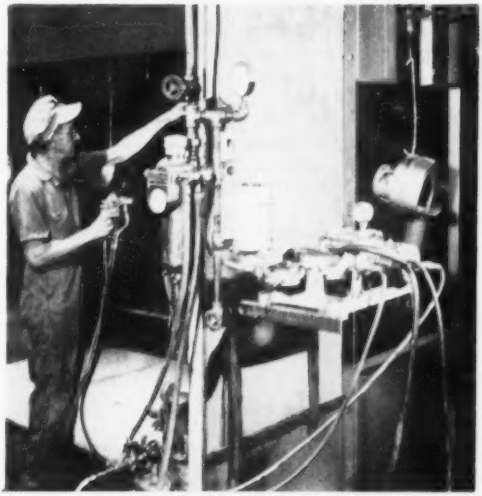


Abrasive sleeve is slipped on Chicago Rubber slotted contact wheel (top). Power application (below) expands wheel, makes it grip sleeve.

BETTER FINISH....LOWER COST
with SPEE-FLO hot spray

"We improved quality . . . saved time and material . . . reduced equipment maintenance . . . and hot spray was responsible."

That's the word from Nu-Way Corporation's Robert Turner, Production Manager of the Rock Island, Illinois, firm. Nu-Way, a major producer of domestic and commercial oil burners, recently switched to Spee-Flo hot spray finishing equipment. Advantages reported include: better build and holdout, higher gloss and denser film, improved coverage and fewer rejects. Besides these welcome improvements in quality control, Nu-Way cut enamel consumption by ⅓—due largely to reduced overspray—and eliminated the use of thinner. Faster application and drying, and lower maintenance also resulted from the hot spray method.



WHAT TO LOOK FOR IN HOT SPRAY EQUIPMENT

UL Approved

VISIT US AT THE PLANT MAINTENANCE SHOW—JANUARY 28-31 CLEVELAND

1. **Simplicity**—simple as an electric light. Turn it on in the morning . . . ready to spray in 5 minutes. Turn it off at night . . . patented, coil-less construction eliminates daily cleanout or attention.
2. **Efficiency**—full heating range . . . 90 to 180 degrees F. Easy, accurate control . . . maintains "factory fresh" efficiency . . . no coils to clog, no pump gears to wear.
3. **Proof**—watch it work! There are 26 trained sales engineers, plus local distributors everywhere, who maintain stocks of Spee-Flo equipment. Ask for a demonstration.

SPEE-FLO EQUIPMENT HAS 'EM ALL! COMPARE BEFORE YOU BUY.

Get all the facts, including case history data, in the free booklet, "Why Hot Spray?"

SPEE-FLO **HOT SPRAY HEATERS**

Dept. PF-30, 720 Polk, Houston, Tex.

6619

For more data circle 251 on Reader Service Card

F. L. & J. C. Codman Company
Delta Div., Rockwell Mfg. Co.
Detroit Surfacing Machine Co.
Engelberg Huller Co., Inc.
Fenlind Engineering Co.
Formax Manufacturing Corp.
Grinding & Polishing Machinery Co.
Hammond Machinery Builders, Inc.
Hill Acme Company
Mead Specialties Co.
Merit Products, Inc.
Nazar Rubber Company
Nicholas Equipment Co.
Nu-Matic Grinders, Inc.
Oliver Machinery Co.
Porter-Cable Machine Co.
Production Machine Company
Rotor Tool Company
Skil Corporation
Sundstrand Machine Tool Co.
Syntron, Inc.

NEW POSITIONS

David Birger Orden has been named Latin-American representative by **Metal & Thermit Corporation,** Rahway, N. J. Mr. Orden's headquarters will be in Mexico City, from which point he will contact Metal & Thermit's distributors and direct customers in Latin America.

David Birger Orden

Ronald J. Lang

Ronald J. Lang recently joined the industrial sales and service staff of **Wyandotte Chemicals Corporation.** Mr. Lang will headquarter in Wyandotte's Motor City office. He is a member of the A.E.S. and has had experience with two chemical firms in pilot plant, research, development and technical service activities.

★ ★ ★

Emil Fischer has been appointed resident New England sales engineer, for **Sel-Rex Corporation, Precious Metals Div.,** Belleville, New Jersey.

Appointed primarily to serve precious metals users in the area, Mr. Fischer will also represent Sel-Rex selenium and germanium rectifiers, and Sel-Rex "Double-Duty" Filters, manufactured by Bart-Messing Corporation, an associated company.

Sid Mitwol

Emil Fischer

Sid Mitwol has been named midwestern sales manager for Sel-Rex selenium and germanium rectifiers and "Double-Duty" filters, according to an announcement from the **Bart-Messing Corporation,** Belleville, N. J.

Mr. Mitwol will headquarter in the firm's Detroit office, 18040 James Couzens Highway, where he will work under S. S. Wilson, vice president in charge of midwestern operations.

★ ★ ★

Carl C. Clabaugh has been promoted to manager of the metal cleaner department of **Cowles Chemical Com-**

pany, Cleveland, Ohio. He will have full charge of the sales of Cowles' alkaline metal cleaners, Ty-Bond zinc phosphate metal coatings, anti-corrode oils, and related items.

Mr. Clabaugh had been metal cleaner sales manager for Cowles since June 1954, after serving for about a year as assistant manager. He started with Cowles as a metal cleaner salesman in Philadelphia in 1951.

Carl C. Clabaugh

Rene Sonnenfeldt

Rene Sonnenfeldt has been appointed sales engineer for the **Bart-Messing Corporation,** Belleville, New Jersey.

Prior to joining Bart-Messing, Mr. Sonnenfeldt held sales engineering positions for Dutch companies, which took him to several European countries "trouble-shooting" and on service calls. In the United States, he held positions with American Plating Inc., Zelionopole, Pennsylvania, and Bart Laboratories, Belleville, New Jersey.

★ ★ ★

Several new appointments have been announced by **Norton Company** following the establishment of three new divisions. **Theodore J. Englund** has been appointed manager of Industrial Engineering. **Paul L. Lantz** has been named assistant manager of Industrial Engineering.

William F. Watts has been named to the new post of factory manager of the Refractories Division. **William P. Densmore** has been appointed chief industrial engineer, another new position in the Refractories Division.

★ ★ ★

Hanson-Van Winkle-Munning Co., Matawan, N. J., has announced the appointment of **Russell E. Davis** as a sales representative for the company in the Los Angeles, Calif., area.

Mr. Davis will represent H-VW-M in the sale of the company's metalfinishing equipment, supplies and processes under the general direction of Harold R. Smallman, district manager of the Los Angeles office and an assistant vice president of the company.

Dean H. Snelgrove

Russell E. Davis

Dean H. Snelgrove has been appointed industrial sales representative of **Wyandotte Chemicals Corporation's J. B. Ford Division,** covering southwestern Michigan. Mr. Snelgrove's office will be in Battle Creek.

★ ★ ★

Allied Research Sales Corporation, marketing subsidiary of Allied Research Products, Incorporated, manufacturer of the Iridite line of chromate conversion coatings and ARP plating chemicals, has appointed **George H. Merz** as sales engineer. Mr. Merz will handle the eastern Ohio-western Pennsylvania territory from headquarters in the Bulkley Building, Cleveland 15, Ohio.

A. E. S. ANNUAL TRI-STATE REGIONAL MEETING, French Lick-Sheraton Hotel, French Lick, Ind., March 30.

Michigan Chrome & Chemical Company, Detroit, Michigan, has announced the transfer of **Donald G. Patterson** to Chicago. Mr. Patterson will be responsible for sales and service in northern Illinois and Indiana, Wisconsin and Minnesota.

Donald G. Patterson

Ted Root

Ted Root has been appointed sales representative in the Michigan territory for Michigan Chrome.

Mr. Root has been working in Michigan Chrome's laboratory, developing applications for the Miccro coatings.

MEETINGS

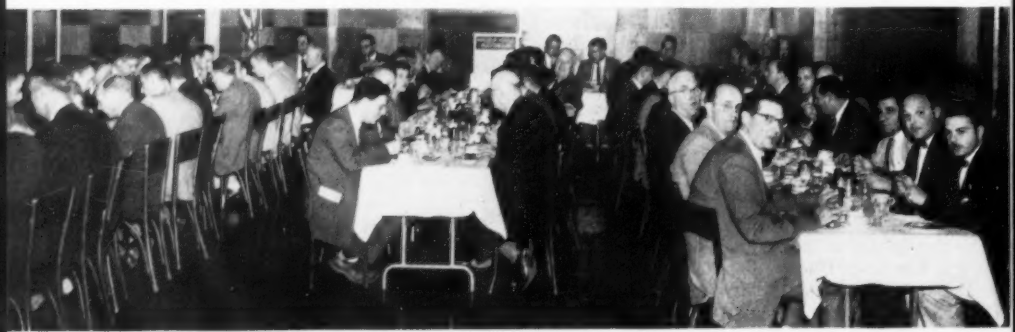
Dr. Walter R. Meyer, president of **Enthone, Inc.,** New Haven, Conn., will speak to the Chicago Branch of the American Electroplaters' Society on Friday, January 11, 1957. The subject of the talk will be "New Methods for Stripping Electroplated Coatings."

The talk will consider stripping nickel from various bases, such as steel, copper, brass and zinc base die castings. It will also describe methods for stripping silver, zinc, cadmium, tin and lead.

★ ★ ★

Plans for the 1957 convention of the **American Electroplaters' Society** are well under way, according to **G. Ross Davidson,** Canadian Hanson & Van Winkle Co., Ltd., general chairman of the **44th Annual Convention,** which will be held in Montreal, Canada, June 16-20. Convention headquarters will be the Sheraton-Mount Royal Hotel.

Vice chairman of this year's convention is **Charles M. Douglas,** Douglas Chemical Co., Ltd. The educa-



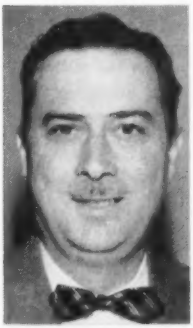
At the Nov. 14 meeting of the Los Angeles Branch, A.E.S., Kenneth C. Johnson, Industrial Filter & Pump Mfg. Co., discussed "Water Treatment by Ion-exchange." (PRODUCTS FINISHING Photo.)

P. M. Coady

tional program is being handled by **P. M. Coady,** Rediweld (Canada) Ltd.

An excellent technical program is being planned for the convention as well as entertaining social events in the world's second largest French speaking city, Montreal.

Charles M. Douglas



G. Ross Davidson

TRAINING COURSES

The course of study in electroplating given at the **Fort Greene Evening High School,** 29 Fort Greene Place, Brooklyn, N. Y., (formerly Brooklyn Evening Technical High School) will begin its spring term on February 4.

The session is divided into classroom discussion and laboratory experiments. The classroom topics will include simple calculations, reading graphs, chemistry of the plating tank, pH, wetting agents, pitting and deionizing. The laboratory experiments will include solution analysis, Hull cell studies and anodizing.

Registration begins January 28, 1957, and daily thereafter from 7:00 to 9:00 P.M. Classes will meet on Mondays and Wednesdays from 6:45 to 8:15 P.M. including about six Fridays. The term begins February 4 and ends June 27, 1957. Register with **L. Serota** in Room BW17 or 3E10.

★ ★ ★

A distinct and valuable contribution is being made by **Mitchell Raskin** to the advancement of the plating industry in the Los Angeles area. For the past twelve years Mr. Raskin has conducted classes in electroplating at the **Engineering Extension Division of the**

View of plating class in Los Angeles, California. At left is Norman Painter, Hall-Mack Company. Mr. Raskin is at the far left. (PRODUCTS FINISHING Staff Photo.)

University of California (Berkeley). During this time he has trained 375 students. There are 47 students in the 1956-1957 class.

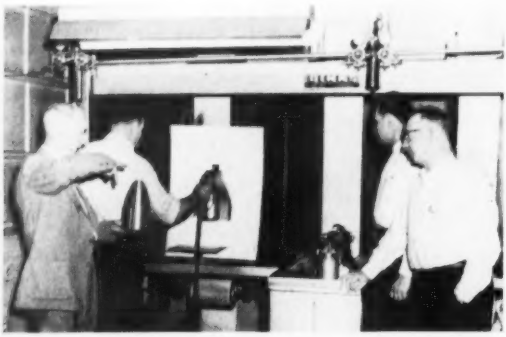
Mr. Raskin, vice president of Ajax Hardware Manufacturing Company, Los Angeles, conducts a shop-level, two-semester lecture course for plating shop owners, chemists, platers, process engineers, and others concerned with plating methods.

★ ★ ★

Binks Manufacturing Company's Spray Painting School has announced the Winter class schedule.

The five-day school provides instruction in the use of manual and automatic spray painting equipment. Students learn the operation and servicing of paint circulating systems, oil and water extractors, spray guns, material handling pumps, flocking equipment, compressors, and auxiliary equipment.

The comprehensive course, under the direction of spray painting authority William Beacham, teaches the painter how to reduce paints and coatings to obtain the best finishes, instructs chemists in preparing materials for spray application, and instructs production managers in the techniques of obtaining optimum performance from spraying equipment.



Student learns the special technique required for applying an even paint finish to a cylindrical object at the Binks Manufacturing Company's school of spray painting.

Binks has announced the following schedule: January 7 through 11, February 4 through 8 and February 25 through March 1.

Though classes are tuition-free, each student is responsible for his transportation and expenses while in Chicago. For reservations for any one of the Winter sessions, write Binks Manufacturing Co., 3118-40 W. Carroll Ave., Chicago 12, Ill.

HONORS

Two **Wyandotte Chemicals** representatives, **Fred Troxell** and **John Pryor,** recently received 25-year service watches. Mr. Troxell is district sales manager of the Cleveland district and

Fred Troxell, left, and John Pryor, right, received 25-year service watches from Wyandotte Chemicals Corporation. Fred Tholen, center, sales manager, congratulates the men.

Mr. Pryor is a salesman in New York City. Nearly 2,100 service watches have been awarded by Wyandotte Chemicals. Messrs. Troxell and Pryor are among the 857 Wyandotte employees who wear 25-year watches and are still in active service.

SOCIETIES

A "Chemical Resistant Coatings" Panel—object of which was to discuss the performance of coatings made from styrene-butadiene, chlorinated rubber, vinyl, and epoxy vehi-

cles—was presented at the **34th Annual Meeting of the Federation of Paint and Varnish Production Clubs** at the Netherland Hilton Hotel in Cincinnati, Ohio, on October 23rd.

One of the most severe tests to which a paint film can be subjected is that of resistance to a variety of chemicals. In recent years the paint industry has been quite successful in developing finishes that are resistant to various chemicals and which may be used on either interior or exterior surfaces. While no one formulation will adequately perform under all the conditions to which chemical-resistant coatings are subjected, coatings are available that will give satisfaction under most conditions.

The Moderator of the panel was Raymond C. Adams, of Gilman Paint & Varnish Co., Chattanooga, Tenn.

The other members of the panel were: John E. Warner, of the Coatings Department, The Goodyear Tire & Rubber Co., Akron, Ohio; Harry W. Howard, of the Resins and Plastics Department, Shell Chemical Corp., New York, N. Y.; William H. McKnight, of Vinyl Resin Coating Development, Bakelite Co., Melion Institute, Pittsburgh, Pa.; and Robert D. Ullrich, of Chlorinated Products Sales, Hercules Powder Co., Wilmington, Del.

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MEETINGS of INTEREST to FINISHERS

Dec. 6. Eleventh Annual Christmas Party, San Francisco Branch, A.E.S., The Village Restaurant, San Francisco, Calif.

Dec. 14. Annual Meeting, Newark Branch, A.E.S., Robert Treat Hotel, Newark, N. J.

Dec. 15. Christmas Party, Newark Branch, A.E.S., Robert Treat Hotel, Newark, N. J.

March 30. Fourth Annual Tri-State Regional Meeting, A.E.S., French Lick-Sheraton Hotel, French Lick, Ind.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

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47. Blackening Process
Bulletin H-16 gives full information on the Park 190 Process of black oxide finishing. Park Chemical Co., 8074 Military Ave., Detroit 4, Mich.

48. Thickness Measurement
Reprint entitled "Thickness of Electrodeposited Coatings by the Anodic Solution Method," by C. F. Waite, Kocour Co., 4814 S. St. Louis Ave., Chicago 32, Ill.

49. Buffers and Polishers
Catalog No. 72-FB describes and illustrates V-belt and direct drive buffers and polishers and dust collectors. Hisey-Wolf Machine Co., Cincinnati 8, Ohio.

50. Protecting Electroplated Surfaces
Complete information on protection of chemically cleaned and electroplated surfaces by Laqua, a material that can be dip or spray applied. Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, N. J.

51. Barrel Finishing Compound Chart
Chart gives the proper compound to use for barrel finishing various metals. Includes recommendations for removing oil or grease, deburring, micro finishing, other operations. Esbec Barrel Finishing Corp., 19 Beech St., Byram, Conn.

52. Infrared Oven Sections
Literature tells how ovens of any size or shape may be built from Dry Clime lava-coated ceramic-type infrared oven sections. Dry Clime Lamp Corp., Greensburg, Ind.

53. Solvent Vapor Degreasing
Booklet describes the Blakeslee vapor degreasing process, includes data on design and construction features of company's line of degreasers, applications and advantages of degreasing, and information on degreasing solvents. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

54. Zinc-Pigmented Primers
Folder details properties of Zincilate primers: drying characteristics, flexibility, lifting properties, hydrocarbon resistance, humidity resistance, and salt spray resistance. Tells how this material can help the metal finisher meet military specifications. Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, Ohio.

55. Electrolytic Tinning Power Supply
Bulletin explains advantages of using Chandeysson Motor Generators for electrolytic tinning and other operations requiring low-voltage d.c. power. Chandeysson Electric Co., 4082 Bingham Ave., St. Louis 16, Mo.

56. Vacuum Metalizing Equipment
Bulletin describes and illustrates equipment for coating metals by vacuum metalizing. Consolidated Electrodynamics Corp., Rochester Div., Rochester 3, N. Y.

57. Masks for Precision Painting
A 20-page book gives information on spray painting masks custom-made for use on stampings and die castings that have depressed or raised detail or other irregular surfaces. Wm. M. Fiore, Inc., 269-41st St., Brooklyn 32, N. Y.

58. Quartz Immersion Heaters
Folder explains advantageous features, gives specifications for Clepco fused quartz immersion heaters. Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

59. Electrostatic Spray Equipment
Bulletin IS-56A illustrates and describes ionic electrostatic spray equipment. Includes information on four different processes for electrostatic spray painting. Scientific Electric, 105-119 Monroe St., Garfield, N. J.

60. Vapor Degreasing Handbook
Technical details on the vapor degreasing process, equipment, methods, and solvents. Handy reference guide on degreasing problems. Phillips Mfg. Co., 3457 W. Touhy Ave., Chicago 45, Ill.

61. Protective Coating Chemicals
Guide to a variety of chemicals used in metal treatment. Table gives data on chemical to use for specific purpose, method of application, object of coating, type of coating formed. American Chemical Paint Co., Ambler 14, Pa.

62. Vacuum Metalizing Coils
Application and performance data on Sylvania Tungsten Coils for vacuum metalizing. Entitled "New Process Sylvania Tungsten Coils and Strands." Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

63. Portable Plating Barrels
Information on portable plating barrels. Various models and sizes. Geo. A. Stutz Mfg. Co., 4410 Carroll Ave., Chicago 24, Illinois.

64. Corrosion-Proof Floor Surfacing
Complete technical information on Corocrete Corrosion-Proof Floor Surfacing for protecting floors from acids and other corrosives. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

65. Complete Finishing Systems
Information on complete, integrated, conveyorized systems for application of paint and for related pre-painting and post painting operations. Despatch Oven Co., Dept. C, 619 S. E. 8th St., Minneapolis, Minn.

66. Pre-Painted Metal
Folder includes sample of embossed metal that was painted before stamping and embossing. Roll Coater, Inc., Pendleton, Indiana.

67. Stripping Metals
"Enstrips" Booklet gives information on Enthone strippers for removing deposits of one metal from another metal, without attacking the base. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

68. Heavy-Duty Cleaning
Detailed information on the advantages and use of Dow Sodium Orthosilicate in cleaning metal. Useful in dip, soak or electrolytic operations. Dow Chemical Co., Dept. AL 764K, Midland, Mich.

69. Tumbling Compound
Complete data on "Organ-Tu," a liquid organic tumbling compound that is said to aid in producing high color and finish. Finger Lakes Chemical Co., Etna, N. Y.

70. Vapor-Spray Degreasers
Technical descriptions, illustrations of Detrex VS800 degreasers. Detrex Chemical Industries, Inc., Box 501, Detroit 32, Mich.

71. Wet Blasting
Bulletin 1403 gives information on the abrasive wet blasting process of cleaning. Pangborn Corp., 5000 Pangborn Blvd., Hagerstown, Md.

72. Heat-Resistant Paints
Brochure gives information on heat-resistance characteristics of silicone-based paints, includes list of paint manufacturers who sell silicone paints. Dow Corning Corp., Dept. 5010, Midland, Mich.

73. Washing Machine Cleaner
Cowles QC Bulletin gives technical data on cleaner (for use in washing machines) that is said to give good wetting and emulsification without foaming. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

74. Barrel Finishing Equipment
A 52-page general catalog of Almco barrel finishing equipment and supplies. Contains detailed basic information on the barrel finishing process. Almco Div., Queen Stove Works, Inc., 810 Marshall St., Albert Lea, Minn.

75. How to Plan Paint Arrestor Installation
Catalog shows how RP Paint Arrestors remove overspray solids from the air exhausted from spray booths, gives diagrams and information on how to install paint arrestors. Includes photographs of typical installations. Research Products Corporation, Dept. 38, Madison 10, Wisconsin.

76. Portable Spray Painting Equipment
Bulletin P.C. describes Binks Oil-Less Compressor, other equipment used in portable spray painting outfits. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

77. Vapor Degreaser
Data sheet describes Circo Model OP-3 Liquid-Liquid-Vapor Degreaser, which is said to be especially suited for cleaning parts that have a tendency to nest or pack, or have hidden recesses that are hard to reach. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway), N. J.

78. Guide to Better Plating Power
A 12-page booklet gives information on plating power supplies, rectifiers. Bart Messing Corp., 229 Main St., Belleville 9, New Jersey.

79. Smoother Surfaces for Aluminum
Folder contains data on the Alchemize process for chemical polishing aluminum, cites advantages thereof. Alchemize Corp., 1420 S. Talman Ave., Chicago 8, Ill.

80. Polishing Machinery
Catalog No. 80 describes and illustrates a variety of backstands and abrasive belt machines and polishing and buffing lathes. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Michigan.

81. Metal Cleaners
A bulletin on the application of Matawan cleaners in preparing metallic surfaces for electroplating, anodizing, painting and other decorative or protective coatings. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

82. Corrosion-Resistant Equipment
Design Service bulletin describes service which includes corrosion-resistant heat exchangers, chlorine coolers, falling film absorbers, and towers of all types. Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Delaware.

83. Coated-Abrasive-Leaf Wheels
An illustrated booklet describing "PG" (polishing and grinding) wheel applications in case history form. "PG" wheels are intended to perform the functions of set-up wheels, sisal and rag buffs, greaseless compound wheels and rubber-bonded polishing wheels. The wheels are formed from hundreds of die cut, cloth-backed coated abrasives leaves locked in a hub. Minnesota Mining and Manufacturing Co., Dept. FH-106, 900 Fauquier St., St. Paul 6, Minn.

For Free Literature Circle Numbers on Card Inside Front Cover

84. Vinyl Chloride Coatings
Catalog entitled "Firestone Exon Solution Resins" contains information on properties of films formed from various coatings based on Exon vinyl chloride resins. Firestone Plastics Co., Dept. 664 N, Pottstown, Pa.

85. General Purpose Fans
Literature on portable, self-contained units of medium capacities for low pressure industrial and ventilating applications. Bulletin 563. The New York Blower Co., 32nd and Shields Ave., Chicago 16, Ill.

86. Crack-Free Chromium
Bulletin CFC-1 gives technical details, advantages of recently developed chromium plating process. Metal & Thermit Corp., Rahway, N. J.

87. Reference Files on Conversion Coatings
Handy reference file on chromate conversion coatings gives technical data and applications for each of these corrosion-preventive treatments. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

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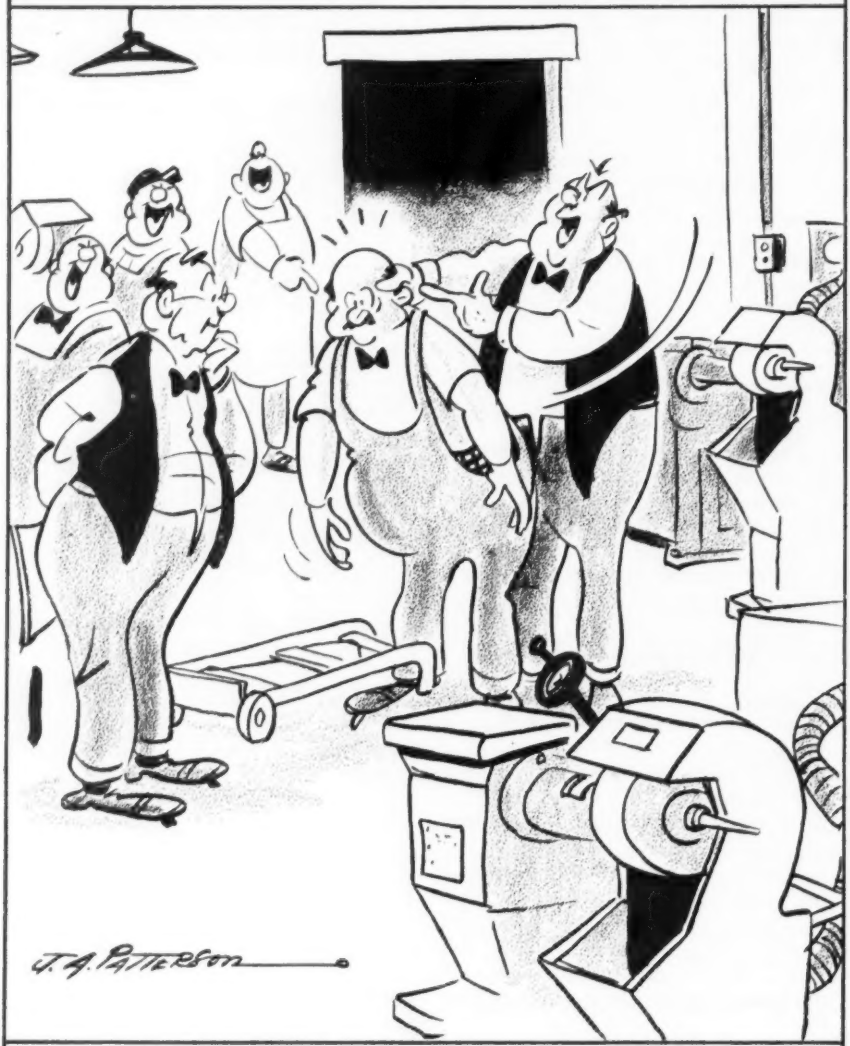

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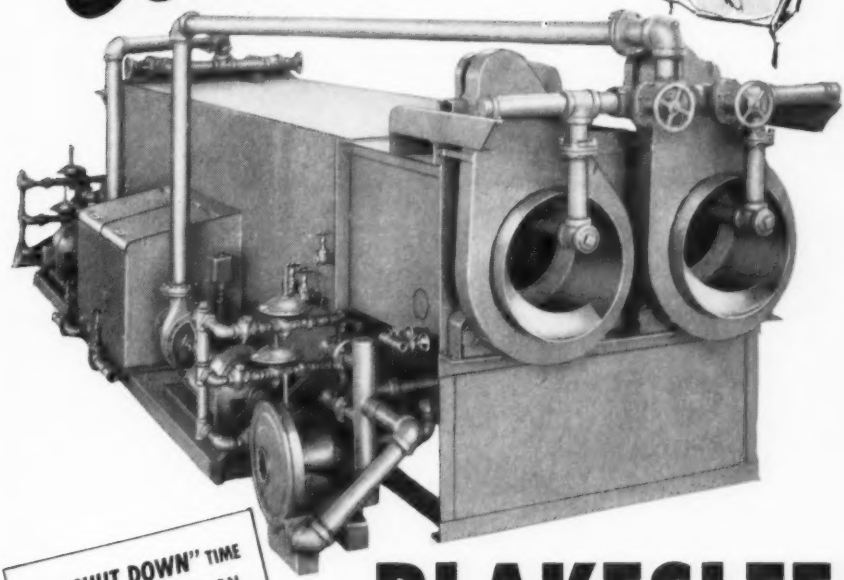

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